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EDITORIAL

CARCINOMA OF THE PANCREAS

The problem of carcinoma of the head of the pancreas and the peri-ampullary region and the methods of treatment of this condition have been reviewed by Kaufman and Wilson.[1] Without treatment this form of malignant disease is lethal, and even with treatment the number of lives saved is small. Before 1935 a usual procedure was the relief of associated jaundice, but in recent years pancreatico-duodenal resection has been developed as a common procedure and numerous modifications of technique have been described; the literature contains many reports on all aspects of the subject.

Most cases of peri-ampullary malignant disease are only discovered after obstruction of the common bile-duct has produced jaundice, and most cases are not detected at an early stage. In the differential diagnosis from jaundice caused by cholelithiasis pain is not a reliable symptom. While it is true that calculi in the biliary tract generally produce pain, there may be no pain with the 'silent common-duct stone'; and numerous reports have shown that carcinoma of the head of the pancreas also produces pain in at least half the cases. The old saying that painless jaundice implies cancer of the extrahepatic ducts, and that jaundice accompanied by pain signifies stone in the biliary tract, is therefore not always correct. Carcinoma of the ampullary region has been shown by various workers to produce painless jaundice in about 60% of cases; the biliary obstruction is frequently caused before the growth spreads into the retroperitoneal pain-bearing structures. Cancer of the head of the pancreas, on the other hand, may originate some distance from the biliary ducts and spread to the pain-bearing retropancreatic structures before reaching the biliary tract. One feature that has been observed in the more advanced cases of pancreatic malignancy is that pain is relieved to some extent by leaning forward, possibly from reduction of pressure on retro-

VAN DIE REDAKSIE

KARSINOOM VAN DIE PANKREAS

Kaufman en Wilson[1] bespreek die vraagstuk van karsinoom in die bo-ent en rondom die verwydingsarea van die pankreas, asook metodes van behandeling. As dit nie behandel word nie, is hierdie soort kwaadaardige siekte dodelik, en selfs met behandeling word baie min lewens gered. Voor 1935 was verligting van meegaande geelsug die gewone prosedure, maar in die laaste jare is reseksie van die pankreas en duodenum ontwikkel as algemene tegniek en baie wysigings daarvan word beskrywe; die literatuur bevat baie verslae oor alle aspekte van die onderwerp.

Die meeste gevalle van gewasse in die periampullêre streek word eers ontdek nadat geelsug veroorsaak is deur verstopping van die gemeenskaplike galbuis; in die meeste gevalle word dit nie op 'n vroeë stadium uitgeken nie. By onderskeidende diagnose tussen die voorafgaande kondisie, en geelsug weens galsteensiekte, is pyn nie 'n betroubare simptoom nie. Dit is wel waar dat galbuisstene gewoonlik pyn veroorsaak, maar in die geval van 'n ‚stil steen' in die gemeenskaplike buis is daar moontlik geen pyn nie. 'n Groot aantal verslae bewys dat karsinoom aan die bo-ent van die pankreas ook in ten minste die helfte gevalle pyn veroorsaak. Die ou gesegde dat pynlose geelsug kanker van die buitelewerse buise beteken, en dat geelsug met meegaande pyn 'n steen in die galbuise beteken, is dus nie altyd waar nie. Dit is deur verskeie werkers bevestig dat karsinoom van die verwydingsarea in omtrent 60 persent gevalle wel pynlose geelsug veroorsaak. Die galbuisverstopping word dikwels veroorsaak voordat die gewas na die pyndraende weefsels agter die buikvlies versprei. Aan die ander kant kan kanker aan die bo-ent van die pankreas *buite* die galbuise ontstaan en dan na die pyndraende weefsels agter die pankreas versprei voordat dit die galbuise bereik. 'n Kenmerk wat waargeneem is by die meer gevorderde gevalle van kwaadaardige pankreasgewasse, is dat die pyn effens verlig word deur vooroor te buig (waarskynlik omdat daar dan minder druk op die organe agter die pankreas uitgeoefen word), terwyl 'n liggende posisie die ongemak vererger.

Ander simptome wat voorkom is 'n afname in gewig, moegheid, aptytverlies, en steurings van die spysver-

pancreatic structures, whereas an increase in discomfort occurs on lying down.

Loss of weight, fatigue, loss of appetite, and gastro-intestinal disturbances, are other symptoms that occur, but the diagnosis of malignant disease in this area depends on the doctor's suspecting it when unexplained loss of weight, pain and jaundice occur, whether separately or together, possibly with gastro-intestinal upset. Early exploration is necessary in all cases in which the condition is suspected if better results are to be obtained in its treatment. Local physical findings are not likely to help in early diagnosis, and once a palpable mass is present it usually indicates an advanced lesion; however, 15% of tumours of the pancreatic head have associated cysts which may confuse the picture. Amongst the special laboratory aids available, the demonstration of tumour cells in aspirated material from the duodenum is of value. X-ray studies have suggested the true diagnosis in only about 1/3rd of cases. Not only is early diagnosis of the disease difficult from symptoms, signs and laboratory procedures, but even at operation it may be difficult to differentiate malignancy from other conditions. Malignancy may be confused with pancreatitis, and even histological study made at the time of operation is difficult and often inaccurate, so that most times surgeons will depend on the clinical impression.

By using an orderly system of exploration the surgeon will evaluate the extent of the lesion, and by adopting certain manoeuvres he will be able to demonstrate whether the tumour can be resected, before committing himself to a major procedure. With supporting evidence from the literature, and from personal experience, Kaufman and Wilson[1] discuss the question of radical excision of peri-ampullary carcinoma and four of the important problems involved, namely (1) disposition of the pancreatic duct, (2) disposition of biliary drainage, (3) the re-establishment of intestinal continuity, and (4) the stages required. A radical pancreatico-duodenectomy cuts across 3 ductal systems whose continuity has to be re-established. The most unfortunate and most frequent complication in this regard is disruption of the pancreatic anastomoses. There are various methods of dealing with the pancreatic duct, but pancreatic fistula is still a likely complication. Its occurrence will make it necessary to protect the patient's skin against the action of digestive ferments, while the nutritional elements, fluid and electrolytes that are lost must be properly replaced. Other immediate and delayed complications may occur less frequently; these include biliary fistula, haemorrhage, diabetes, acute pancreatitis, and occlusion of the mesenteric vessels. Up to 1949 no patient had apparently survived 5 years after the operation but at present there are 8 reported 5-year survivals following pancreatico-duodenal resection for carcinoma of the head of the pancreas; 21 5-year survivals for cancer of the ampulla, and a few 5-year survivals for other forms of carcinoma in this region. As experience is being gained better results are being obtained.

1. Kaufman, L. W. and Wilson, G. S. (1955): Amer. J. Med. Sci., **230**, 200.

teringstelsel, maar 'n diagnose van 'n kwaadaardige gewas in hierdie streek hang daarvan af of die dokter so-iets vermoed wanneer gewigsafname, pyn en geelsug òf alleen òf tesame voorkom—moontlik met 'n steurnis van die spysverteringskanaal. By alle geval waar hierdie kondisie vermoed word, is vroeë ondersoek nodig om later, onder behandeling, die beste resultate te verkry. Plaaslike liggaamlike bevindings sal waarskynlik nie van groot hulp by vroeë diagnose wees nie, en as daar eers 'n voelbare massa is, beteken dit gewoonlik dat die letsel reeds 'n gevorderde stadium bereik het. Bowendien het 15 persent van gewasse aan die bo-ent van die pankreas meegaande siste wat verwarring mag veroorsaak. Onder die spesiale laboratoriumtoetse wat beskikbaar is, is die aantoon van gewassélle in stof uitgesuig uit die duodenum van waarde. In slegs 'n derde van gevalle is die korrekte diagnose deur roentgenstraalbeelde aangetoon. Vroeë uitkenning van die siekte deur middel van simptome, tekens, en laboratoriummetodes is moeilik, en selfs by die operasie kan dit moeilik wees om kwaadaardigheid van ander kondisies te onderskei. Kwaadaardigheid kan vir alvleesklierontsteking aangesien word, en selfs weefselstudies gedurende die operasie is moeilik en dikwels onjuis, met die gevolg dat chirurge hulle maar gewoonlik op die kliniese bevindings moet verlaat.

Met die toepassing van 'n ordelike metode van ondersoek, sal die chirurg die omvang van die letsel kan bepal, en met die hulp van sekere maneuvers kan hy, voordat hy 'n groot prosedure onderneem, vasstel of die gewas uitsnybaar is. Gestaaf deur die literatuur, en uit hulle persoonlike ondervinding, bespreek Kaufman en Wilson[1] die vraagstuk van radikale uitsnyding van periampullêre karsinoom en die 4 belangrikste probleme wat daarby betrokke is, nl. (1) die rangskikking van die pankreasbuis, (2) die rangskikking van die galbuise, (3) die herinstelling van die normale gang van die ingewande en (4) die stadiums wat nodig sal wees. 'n Radikale pankreas-duodenumreseksie sny deur 3 stelsels van buise, waarvan die aaneenskakeling weer herstel moet word. In hierdie verband is verskeüring van die pankreasverbindinge die mins gevaarlike en mees voorkomende komplikasie. Daar is verskillende metodes om met die pankreasbuis af te reken, maar pankreasfistels is nog steeds die waarskynlikste komplikasie. As dit voorkom, moet die pasiënt se vel teen die aksie van spysverteringgisting beskerm word, terwyl die voedingsbestanddele, vloeistof en elektroliete wat verlore gaan behoorlik vervang moet word. Ander komplikasies, onmiddelik sowel as vertraag, kom ook voor, bv. galfistels, bloeding, diabetes, akute alvleesklierontsteking, en afsluiting van die dermkeilbloedvate. Tot 1949 was daar glo geen pasiënt wat die operasie 5 jaar lank oorleef het nie, maar vandag is daar 8 aangemelde gevalle wat 5 jaar na reseksie van die pankreasduodenum vir karsinoom van die bo-pankreas nog in die lewe is. Daar is 21 5-jaar-oorlewendes vir kanker van die verwydingsarea, en 'n paar 5-jaar-oorlewendes vir ander vorms van karsinoom in hierdie streek. Namate die ondervinding wyer word, word beter resultate behaal.

1. Kaufman, L. W. en Wilson, G. S. (1955): Amer. J. Med. Sci., **230**, 200.

SOME ASPECTS OF WHO'S WORK IN 1955*

M. G. CANDAU, M.D.

Director-General of the World Health Organization

Any account of the work of the World Health Organization should be preceded by a statement of some of the basic principles established by the World Health Assembly that guide the activities of the Organization. Some of these principles apply to the cooperation and participation in the work of WHO, and are:

'All countries, including trust and non-self-governing territories, should participate and cooperate in the work of the Organization, for no country in the world, whatever its degree of development, is without its important health problems.

'Services must continue to be available to all Member States and Associate Members without discrimination.

'Cooperation with all countries connotes the countries' full reciprocal cooperation in giving their continued support to WHO.'

Others apply specifically to WHO's work with individual governments, and are:

'Assistance to governments in developing their health services will be given only in response to a specific request. It must not result in the operation of services by WHO for or instead of the government.

'The assistance given should be such as to foster the greatest possible self-reliance and initiative in national and community health services and should therefore include the development of the necessary personnel.

'In the planning and execution of programmes there should be coordination at all levels with all other international work that may affect the health services of the countries.

'The coordination of the country programmes should take place at the country level. Whatever outside assistance it may receive, the government of the country should retain unimpaired the chief and final responsibility for coordinating health programmes within the country.

'In planning country programmes, account should be taken of the resources available within the country as well as those that can be supplied from international sources. No work should be undertaken in a country unless there is a reasonably firm assurance that the country is ready and willing to give that work moral and material support and is able to carry it on when once it has been started with help from WHO.

'No commitment for action should be entered into until all necessary preliminary studies and other preparation have been completed in the country and account has been taken of all relevant assistance already provided by the Organization and by other national or international organizations, and of work done by national administrations or institutions.'

As you will have noted, these principles are broad enough to allow for the differences of many kinds that are found in different regions and in different countries. Our programme for 1955 reflected the varying needs of these diverse countries and regions; but in discussing our work for the year I believe, however, that I should not dwell on details of the programme, interesting though they are, but rather mention some of the outstanding decisions taken by the World Health Assembly itself at its 8th session held last May.

MALARIA

The first important question to come before the Assembly was that of malaria eradication. Malaria control, since the very inception of the Organization, has been a matter of great importance for WHO, not only on account of the great morbidity and mortality of malaria and the economic losses and social handicaps it causes, but also because of the fact that after the second world war, as you will remember, a method had been found that made the control of malaria in rural areas economically feasible. This was the spraying of the inside walls of houses with DDT or BHC. Malaria, as we all know, is chiefly a rural disease, and before the last war there was no method that could be employed at a cost sufficiently low to control malaria in the villages, or the isolated huts, of the tropical rural areas. Having found this method, governments were inclined to apply it widely and WHO felt it its duty to encourage and assist them.

DDT has indeed revolutionized malaria control; and it will be easy to understand that WHO has spared no efforts to assist countries in developing that control. In our calculations, concerning most countries of the world, with the exception of the USSR and the People's Republic of China, and a few others for which no data is available, it may be stated that in 1954 out of a population of 602 million living in malarious areas, 229 millions were already, more or less, protected by insecticides. This would have been a matter of great satisfaction to any public health worker, were it not for a new situation which has arisen during the last 3 years; that is the development of resistance to the insecticides now in use in the anopheline species of some areas. So far this resistance has only been described in some 5 species. (*A. sacharovi*, *superpictus*, *maculipennis*, *sundaicus* and *stephensi;* and, in a behaviouristic sense, *A. albimanus*) in a few localities; but it is to be feared that it may soon occur in others. It may well be—and we very much hope so—that chemists will yet discover other products which will kill insects that have become resistant to DDT, BHC, Dieldrin—or, in a word, to all the chlorinated hydrocarbon insecticides; but till then the uncomfortable fact remains that resistance is a danger against which protection is necessary.

Now, fortunately enough, we know that the great majority of malaria infections, even if they are not treated, do not last more than 3 years: and we also know that in most countries residual spraying of insecticides, if correctly undertaken, interrupts transmission after 1 or 2 years. As a corollary: if we keep this absence of transmission for 3 years, we may say from a public-health standpoint there will no longer remain any source of infection for the anophelines in the population. Then, provided that certain safeguards are taken, the residual insecticide campaign can be discontinued and malaria will then have been eradicated. Hence one may conclude that in order to avoid the danger of insecticide resistance (which seems to require at least 6 years of spraying to develop), eradication should be achieved

* Address delivered at the South African Medical Congress, Pretoria, October 1955.

as soon as possible. You will realize that I am talking of no utopia, when you remember that this has practically been attained already in many areas, both in temperate and tropical countries, from the USA to large areas of Venezuela, from British and French Guiana to Italy, and from some areas of Greece to others in Ceylon.

This new strategy against malaria which, in the view of present expert opinion, seems to be the only rational one, has been supported by WHO during the last 12 months. After 2 conferences, in Chile and in the Philippines, at the end of 1954, it was, as I have already mentioned, at the last session of the World Health Assembly that the subject of this new strategy came to the fore. No less than 28 countries joined in submitting a draft resolution, which was eventually adopted by the Assembly, and which, I feel, may mark a turning point in the history of malaria. This resolution affirms that the eradication of malaria must be the ultimate aim of malaria control programmes, and it '*requests governments to intensify their plans of nation-wide malaria control so that malaria eradication may be achieved and the regular insecticide-spraying campaigns safely terminated before the potential danger of a development of resistance to insecticides in anopheline vector-species materializes*'.

As malaria eradication appears quite possible in most of the malarious areas of the world (with reservations at present, however, as regards tropical Africa) new duties are being laid upon governments and upon the Organization. Governments should provide increased resources, with the compensation that after a few years malaria-control expenses should be reduced to a low maintenance level which is a fraction of what active control now requires, while the Organization shall, according to the Assembly resolution, 'take the initiative, provide technical advice and encourage research and coordination of resources in the implementation of a programme having as its ultimate objective the world-wide eradication of malaria'.

Already at the XIV Panamerican Sanitary Conference Regional Committee for the Americas of WHO held last year, the countries of the Americas had agreed on the urgent need of converting programmes of malaria control into programmes of malaria eradication, and now, one after the other those governments are indeed proceeding to the revision of their programmes. It is hoped that following the Assembly resolution many other malarious countries, in other continents, will also plan for malaria eradication, and it is pleasing to note that this is already happening in Syria, Irak, Formosa and some other countries.

You may have noticed a few minutes ago that I expressed some reservations on the application of this new outlook to malaria in tropical Africa. The reason for this is that so far residual insecticides techniques have not succeeded, alone, in interrupting completely transmission in tropical, continental Africa. There may be several factors involved to explain the scant success in these particular African conditions of a measure which has proved so efficient elsewhere, and since the 1st African Malaria Conference held in Kampala 5 years ago, WHO is making special endeavours to help in the solving of this problem. Several projects, assisted by WHO personnel, have been going on for some time now in the French Cameroons, in Liberia, in Nigeria and in Tanganyika which are trying several methods in the hope of attaining full interruption of transmission. The 2nd African Malaria Conference convened under WHO auspices, is shortly to be held in Lagos, and it is hoped that its debates may yet shape a technical malaria policy for tropical Africa.

POLIOMYELITIS

At its last session the World Health Assembly was confronted by another equally important question, which, as if in some sort of grim compensation, is largely of greater concern to most of those parts of the world which are not contending with malaria. I refer to the problem of poliomyelitis.

We have all of us learned that in the struggle for world wide health and prosperity there is, whatever our achievements, no room for complacency. In the more highly developed countries, where many epidemic bacterial diseases have been eradicated or controlled, we are constantly being confronted with new and pressing problems. One of these, as you in South Africa know only too well, is poliomyelitis.

There is evidence that this infection has been present in the world for thousands of years, yet until 50 or 60 years ago it was regarded as a medical curiosity. Then in the early years of this century there were some disturbing epidemics, mainly in Scandinavia and North America, but the average incidence over the years did not increase alarmingly and in most parts of the world the disease remained rare. During the past 20 years all this has changed, epidemics have become both more frequent and more serious and have affected countries and peoples previously spared. And, instead of affecting infants only, the disease has begun to affect children, adolescents and adults, in whom it tends to be more severe.

Extensive research was needed to explain these changes. We now know that the virus is widely spread throughout the world, but that for various reasons the probability of the occurrence of epidemics and the average age of the patients both tend to increase as countries develop their social and hygiene practices and improve their living conditions In fact, as Dr. James Gear said at the Third International Poliomyelitis Congress last year, 'It is becoming clear that as standards of living are improved in the backward countries, so will the incidence of paralytic poliomyelitis increase. This trend will continue unless means of actively immunizing against infection are found and made generally available'.

Poliomyelitis therefore is now actually or potentially a world problem. In many areas it is not yet a serious problem; but we must, if possible, prevent it from becoming one.

In 1950 the 3rd World Health Assembly stressed the importance of this and recommended the establishment of an Expert Committee to advise on the Organization's activities in this field. As it happened, this recommendation came at an excellent moment—just before Enders

and his colleagues published their fundamental discovery that poliovirus could be grown in tissue-culture. As you know, this discovery completely changed the prospects of eventually finding a method of controlling the disease, and by the time the WHO Expert Committee met in 1953 it was clear that the greatest hope of effective control lay in the vaccines which were under intensive study in several countries. It therefore directed special attention to the problems which needed to be solved for the effective application of vaccines, when these became available. It was clear that most of these problems, both epidemiological and virological, demanded far more laboratory facilities than were available in many countries, and this implied training virologists and equipping and supplying laboratories with the necessary materials. Such develpoment takes time and money; therefore, as well as granting fellowships within the limits of the funds available, WHO organized a worldwide network of leading poliomyelitis laboratories to undertake essential investigations, to train virologists, and to assist national laboratories starting in this field. In this connection I am glad to acknowledge here the valuable cooperation of the Laboratories of the Poliomyelitis Research Foundation in Johannesburg (Dr. J. H. S. Gear) in this international programme. The possibility of developing ready sources of materials, scarce in some countries, such as monkey kidney cells, which are needed for this research, is also under investigation.

Recent events in the story of poliomyelitis vaccine are of course well known to you. These events have made little difference to WHO's programmes since experience has taught us that the public-health application of new methods of control often present serious and unexpected problems. Plans had already been made by WHO through its system of expert advisory panels and expert committees to encourage and stimulate the research needed to ensure that, whatever vaccine is eventually used in the control of poliomyelitis, it will be safe, economical and effective in controlling the disease when employed as part of a country's national health programme, and I can assure you that this work will continue till that end is attained.

Time does not permit me to detail all the problems remaining to be solved, nor the various methods which will be adopted; but I should like to mention a few. The WHO Expert Committee on Biological Standardization, for instance, will consider the problems of establishing a standard reference vaccine and type specific sera this autumn. These are essential steps in the comparison and assay of vaccine and in ensuring comparability of results in coordinated international research. Later, an advisory group, drawn from 9 countries, will meet to discuss the 1955 experiences in the use of vaccines and the lessons to be learned from them, and to make plans for the future. Serological surveys to determine the age-incidence of infection will provide valuable guidance on the best way of using poliomyelitis vaccine, especially in those areas where precise information is lacking regarding the age-incidence of the disease. Standard methods of carrying out these surveys are being developed to yield the maximum of information at the minimum cost. Information on the types of virus responsible for clinical desease, and especially on those viruses which break through the protection of vaccine is becoming increasingly important. WHO is now collecting and publishing this information.

Furthermore, as advances in our knowledge of poliomyelitis have been so rapid and the changes in our ideas so radical that no one but a specialist can be expected to be fully aware of the latest trends, WHO has this year published a monograph on Poliomyelitis written by some of the world's leading experts, thus bringing together recent information in a convenient form.

As a final example of what WHO is doing in this field I would mention the training course it organized in Copenhagen where in 1952 a catastrophic epidemic of poliomyelitis, which included some 330 cases of bulbar and respiratory involvement, provided the Danish specialists with unequalled experience.

ATOMIC ENERGY

A third major item on the agenda of the 8th World Health Assembly last May was the consideration of the action to be taken by WHO in the new field of atomic energy.

New scientific developments have, since its inception, deeply influenced the work of the Organization. For instance, the discoveries in the fields of antibiotics and insecticides have made possible certain types of activities and have resulted in some achievements which without them would not have been thought of and which have benefited all countries. Similarly the Organization now has to explore the potentialities of the use of atomic energy in health work, and before the Assembly closed it approved the programme of action to be taken by WHO in this new sphere. This programme was later submitted by WHO to the recent International Conference on the Peaceful Uses of Atomic Energy which took place in Geneva.

Briefly, the activities of WHO in this new field can be divided into two: one is related to the use of radio-isotopes in medical research, in diagnosis and in treatment of disease; the other concerns the more general problem of protection against the risks of radiations. Though the subject is new, WHO finds that its role, as in many other fields, will be essentially to help countries in the training of personnel, to coordinate and disseminate scientific and technical information, and to stimulate and coordinate research. In doing this the Organization will find the experience already gained invaluable and will apply the methods and techniques which have already proved successful.

The training of personnel is an important point, both with regard to the use of radio-isotopes and to protection against radiation. The latter particularly requires special attention because there is an urgent need for those responsible for public health in general to acquire scientific knowledge of the problems of nuclear energy, and also because there will be an increasing demand for personnel well trained in the protective aspects to work in atomic plants, research institutes and hospitals using radiations.

The collection and dissemination of information is an immediate requirement since the immense mass of information already existing on health problems associated with nuclear energy is not available in condensed form. This is a task of some magnitude, which WHO is tackling by its usual methods of expert committees and study groups and coordination with existing national and international scientific institutions.

One of the essential points to keep in mind is that, with the generalization of the use of nuclear energy, protection against radiation is becoming a public-health problem. Man has of course always been exposed to natural radiations; but as time goes on the ambient radiation level will be considerably raised by artificial sources of radiation unless these are controlled. There is no doubt that this intensification of the background radio-activity may have some somatic and genetic effects on mankind, when a large proportion of the world's population is exposed to it. The danger is still, of course, very small; but, in order to cope with it before it becomes significant, we need better data on the effects of radiation on mankind. As it will obviously take a long time before firm conclusions can be drawn it is necessary to envisage now a world wide study of both somatic and genetic effects. Here WHO will play its part in stimulating research, coordinating national programmes, and helping in the standardization of methods and techniques in order to make the results comparable at the international level.

All this of course creates for WHO a long-term responsibility, parallel with the action undertaken by the United Nations in promoting the peaceful applications of atomic energy and it has become abundantly clear that our generation has the responsibility of transmitting to those who come after us not only the experience of the techniques but also the corresponding knowledge of how to deal with the hazards of nuclear power.

CONCLUSION

Our programmes may, as you have just seen, project far into the future beyond the limitations of the calendar; but however long or short they are, there is one common factor in all the programmes by which WHO attacks health problems. That is the role it plays of catalyser and coordinator by pooling and making universally available the advances made in the various fields of medicine and public health. If the last 7 years have shown that WHO can provide effective leadership in international health, this is because it has been assured of the cooperation of hundreds of outstanding health workers who became members of its panels of experts, participated in its conferences, seminars and study groups, contributed to its various publications, and joined the teams it sent to many countries to demonstrate the most effective ways in which local health problems can be solved. Whether the ultimate aim of WHO, which is nothing less than 'the attainment by all peoples of the highest possible level of health', will finally be achieved, will depend to a considerable degree on the support it continues to receive from men and women with experience and skill in the different branches of public health, as well as with a real understanding of the international obligations incumbent on the Organization.

This will often call for sacrifices on the part of all Member States in releasing, on temporary or permanent basis, staff who are also valuable to their own health administrations. That is why the interest displayed by societies such as the Medical Association of South Africa in the aims and the work of WHO is of such importance to the future of the Organization. And that is why I am deeply grateful to you for having given me today the opportunity to speak to you about some of the work the World Health Organization has undertaken in 1955 in its endeavour to ensure better health and greater happiness to millions of people throughout the world.

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

VACANCY—ASSISTANT EDITOR

Applications are invited from medical practitioners for the post of Assistant Editor in the service of the Medical Association of South Africa at its Head Office in Cape Town.

The salary scale attaching to the post is £1,250×50—1,750 per annum, plus an annual cost-of-living allowance of £176 for single men and £352 for married men. The commencing salary will be determined according to journalistic experience.

The successful applicant must contribute to the Association's Superannuation Fund. He will also be expected to assume duty as soon as possible after appointment.

Applications must reach the Secretary, Medical Association of South Africa, P.O. Box 643, Cape Town, on or before 2 March 1956.

A. H. Tonkin
Secretary

Medical House
Cape Town
23 December 1955

VAKATURE—ASSISTENT-REDAKTEUR

Aansoeke word van geneeshere ingewag vir die betrekking van Assistent-Redakteur in diens van die Mediese Vereniging van Suid-Afrika, by die Hoofkantoor te Kaapstad.

Die salarisskaal aan die pos verbonde is £1,250×50—1,750 per jaar, plus 'n jaarlikse duurtetoeslag van £176 vir 'n ongetroude en £352 vir 'n getroude man. Die aanvangssalaris sal volgens joernalistieke ondervinding bepaal word.

Die suksesvolle kandidaat moet by die Vereniging se pensioenskema aansluit. Hy sal ook verwag word om so spoedig moontlik na aanstelling diens te aanvaar.

Aansoeke moet die Sekretaris, Mediese Vereniging van Suid-Afrika, Posbus 643, Kaapstad, bereik vóór of op 2 Maart 1956.

A. H. Tonkin
Sekretaris

Mediese Huis
Kaapstad
23 Desember 1955

EXPERIMENTAL BILHARZIASIS IN LABORATORY ANIMALS*

III. A COMPARISON OF THE PATHOGENICITY OF *S. bovis*, SOUTH AFRICAN AND EGYPTIAN STRAINS OF *S. mansoni* AND *S. haematobium*

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It is generally believed that Egyptian mansoni bilharziasis is a more serious disease than the South African counterpart. Hepatosplenomegaly is said to be a common manifestation in Egypt but in the African enlargement of the liver is rarely attributable to bilharzia. We wondered, therefore, whether there was any difference between the two strains of *S. mansoni*.

While several excellent papers have been published on the suitability of different laboratory animals as experimental hosts for *S. mansoni*,[1,2] we have found little information on the comparison of the pathogenicity of different strains of *S. mansoni* in various laboratory animals. The original object of this study was to determine whether there was any difference between the local and Egyptian strains of *S. mansoni*. This paper has been extended in scope by incorporating previously accumulated data on *S. bovis* and *S. haematobium* infections.

MATERIAL AND METHODS

The animals used in this experiment include guinea pigs, white mice (the common albino mouse bred in our laboratories), *Mastomys natalensis* (a South African veld rodent which has been bred for many years in the Plague Research Laboratory of the Union Health Department by Mr. D. H. S. Davis) and *Cercopithecus aethiops pygerythrus* (a South African monkey). These animals were infected with a strain of Egyptian *S. mansoni* originally supplied to us by Dr. O. D. Standen of the Wellcome Research Laboratory, London, and maintained by us in *Australorbis glabratus*; a South African strain of *S. mansoni* isolated from a local case and maintained in *Biomphalaria pfeifferi*; and *S. bovis* which was isolated from naturally infected snails in the environs of Johannesburg and maintained in *Physopsis africana*.

The smaller animals were infected by intraperitoneal injection of about 150 cercariae, and the monkeys by intraperitoneal injection of about 800 cercariae. Approximately 100 guinea pigs, mice and mastomys and 2 monkeys were infected with each strain examined. In the case of the smaller animals, 2 or 3 were sacrificed at weekly intervals for the first 14 weeks, at 2-weekly intervals for the next 2 months, and then at 4-weekly intervals until a year had elapsed since infection. Specimens of lung, liver, spleen and large gut were removed for histological examination. The monkeys were anaesthetized and specimens of liver obtained by needle biopsy at intervals similar to those mentioned above.

The histological specimens were fixed in 10% formalin and embedded in paraffin wax, sections were cut at 4μ and stained with haematoxylin and eosin and Masson's trichrome stain (Figs. 1-7).

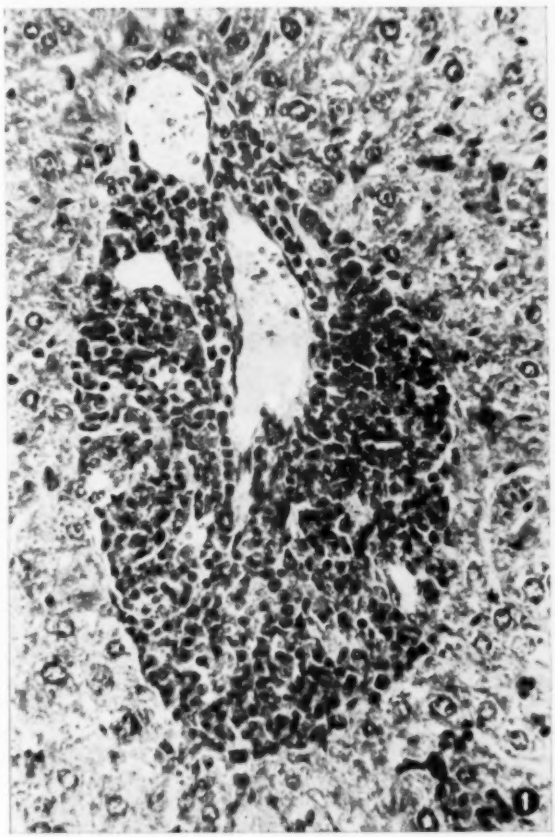

Fig. 1. Liver. H & E × 480. Cellular infiltrate in portal tract

* Articles I and II of the series were as follows:

I. *Early diagnosis of bilharziasis.* S. Afr. Med. J. (1952): **26**, 1005.

II. *Correlation of biochemistry ('liver function tests') and histopathological changes in the liver in early bilharziasis. Ibid.* (1953): **27**, 950.

Fig. 2. Liver. H & E × 120. Early granulomata around ova and one old fibrosed granuloma

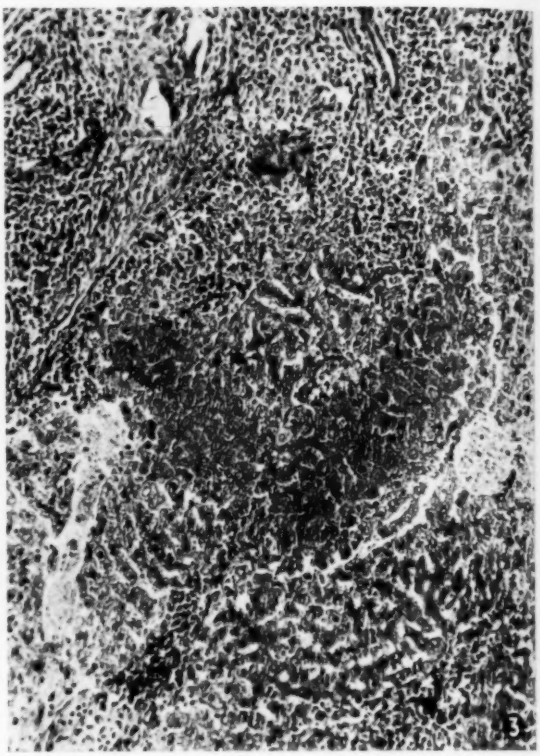

Fig. 3. Liver. H & E × 120. Focus of parenchymal necrosis

ADDITIONAL OBSERVATIONS

Monkeys show some resistance to bilharzial infections when infected with either *S. bovis*, South African *mansoni* or Egyptian *mansoni*. The ova in the liver stimulate a foreign-body reaction. They are soon phagocytosed by giant cells and the granulomata regress. No old fibrosed granulomata have been observed in any of the needle-biopsy specimens or in

The results are summarized in Table I.

TABLE I. APPEARANCE OF LESIONS IN DIFFERENT LABORATORY ANIMALS INFECTED WITH *S. bovis*, SOUTH AFRICAN *S. mansoni*, EGYPTIAN *S. mansoni*, AND *S. haematobium* (IN WEEKS AFTER INFECTION)

Pathology	S. bovis			*S. African* S. mansoni			*Egyptian* S. mansoni			S. haematobium
	Guinea pig	*Mouse*	*Monkey*	*Mouse*	*Mastomys*	*Monkey*	*Mouse*	*Mastomys*	*Monkey*	*Mouse*
Portal tracts infiltrated by lymphocytes, plasma cells, polys and eosinophiles	3	2	3	7	2	6	2	2	7	10
Parenchymal necrosis	—	7	—	3	7	—	3	—	—	—
Adult worms seen in section of liver	—	6		8	3		—	4		14
Pigment in Kupffer cells and histiocites of portal tracts	13	6	9	6	5	8	6	5	14	14
Ova in liver	9	6	6	8	7	10	6	5	10	10
Early granulomata around ova in liver	9	9	13	9	7	9	7	6	9	—
Old fibrosed granulomata in liver	—	10	—	9	9	—	9	9	—	—
Diffuse fibrosis in portal tracts	—	—	40 (slight)	—	—	—	—	9	—	—
Bile-duct proliferation	—	14	40	15	—	—	15	16	—	—
Granulomata around adult worms in liver	—	13	—	—	—	—	15	—	—	—
Ova in large gut	0	10	0	8	7	0	12	7	0	13
Granulomata around ova in lung	0	14	0	32	—	0	15	11	0	0
Granulomata around adult worms in lung	0	—	0	24	—	0	15	24	0	0
Granulomata in spleen	0	—	0	—	21	0	19	23	0	—

— = absent 0 = not examined

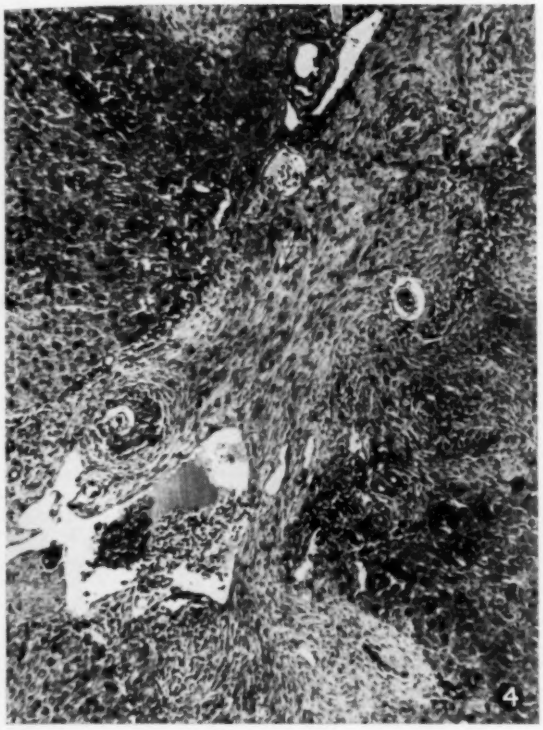

Fig. 4. Liver. H & E × 150. Diffuse fibrosis in portal tract

larger sections of liver from post-mortem material. Two monkeys have been under investigation for more than 3 years. After 9 months there is only a very slight diffuse fibrosis in the portal tracts but there is no evidence of bile-duct proliferation. Parenchymal necrosis has never been observed.

Neither mice nor mastomys show any significant resistance to infection with *S. bovis*, South African *mansoni* or Egyptian *mansoni*. The deposition of ova leads rapidly to the formation of fibrosed granulomata, bile-duct proliferation and areas of parenchymal necrosis. It is of interest to note that when proliferation of bile-ducts occurred it was frequently seen that epithelial cells lining the ducts showed oncocytic change. The extent of this change was not proportional to the extent of the proliferation nor was it related to the severity of the infection. In two animals a similar oncocytic change was seen in the parenchymal tissue. The significance of this finding is still obscure.

CONCLUSIONS

A. *Comparison of susceptibility of different laboratory animals*

1. In monkeys infection with *S. bovis*, South African *mansoni* and Egyptian *mansoni* does not progress beyond the formation of early granulomata and the phagocytosis of the ova. The slight differences found in the time of appearance of the lesions with the various species of bilharzia may well be due to the fact that only a small fragment of liver tissue, obtained by needle biopsy, was examined.

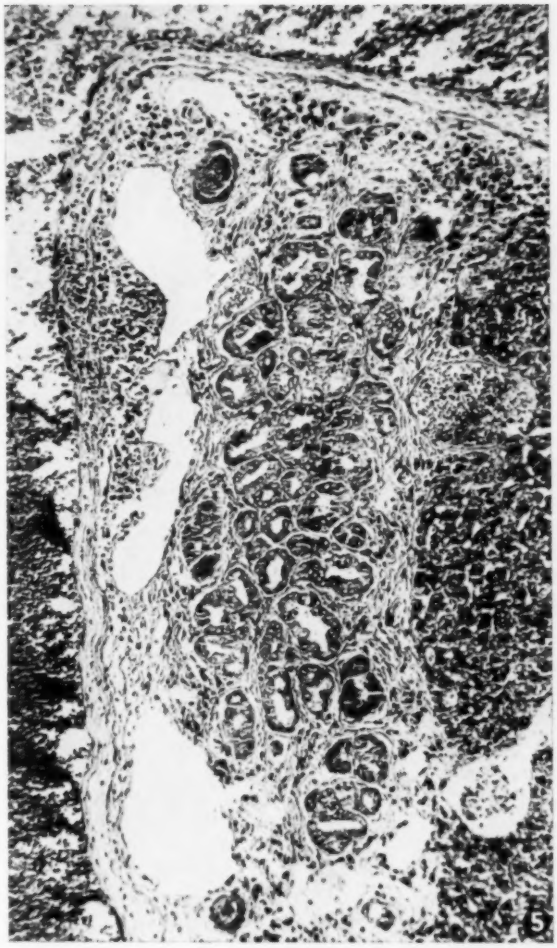

Fig. 5. Liver. H & E × 120. Bile-duct proliferation

2. In mice *S. bovis* and Egyptian *mansoni* infections run an almost identical course while South African *mansoni* infection shows only minor differences in that hepatitis and granulomata take a few weeks longer to appear and lesions are not seen in the lungs until several months later.

3. Mastomys is an excellent laboratory animal for experimental bilharziasis. The lesions develop somewhat more quickly than they do in mice. In these animals Egyptian *mansoni* infection produces proliferation of bile-ducts and lesions in the lung whereas South African *mansoni* infection does not.

B. *Comparison of pathogenicity of different species and strains of bilharzia*

1. *S. bovis* is more pathogenic for mice than for monkeys or guinea pigs.

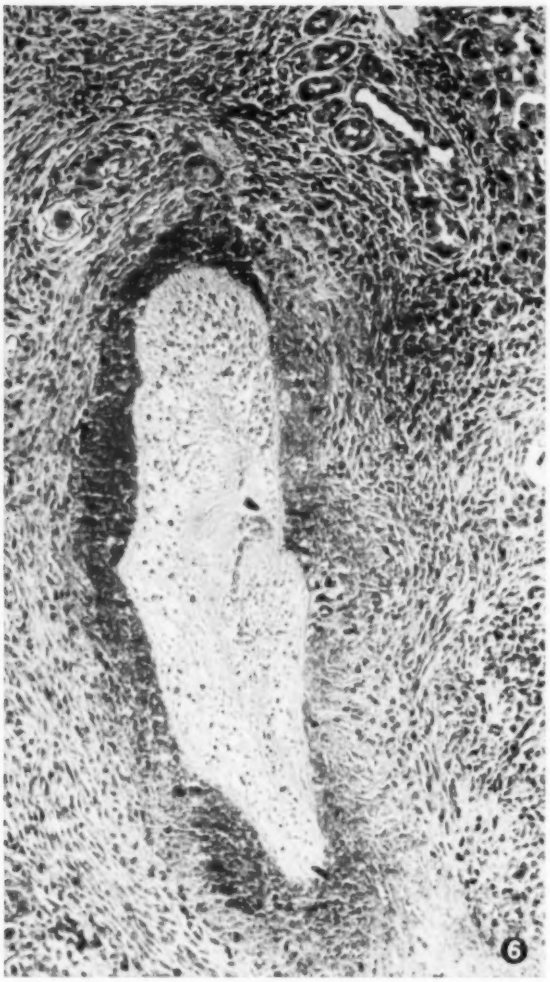

Fig. 6. Liver. H & E × 150. Granuloma around necrotic adult worm

2. *S. haematobium* is only feebly pathogenic for mice. A few ova are passed but granulomatous lesions are not seen.

3. The South African strain of *S. mansoni* is more pathogenic for mice and mastomys than it is for monkeys. The lesions appear earlier in mastomys than they do in mice. The lungs are frequently involved in mice but not in mastomys.

4. The Egyptian strain of S. *mansoni* is more pathogenic for mice and mastomys than for monkeys. There is no significant difference between mice and mastomys.

SUMMARY

1. The susceptibility of monkeys, mice and mastomys to bilharzial infections is compared.

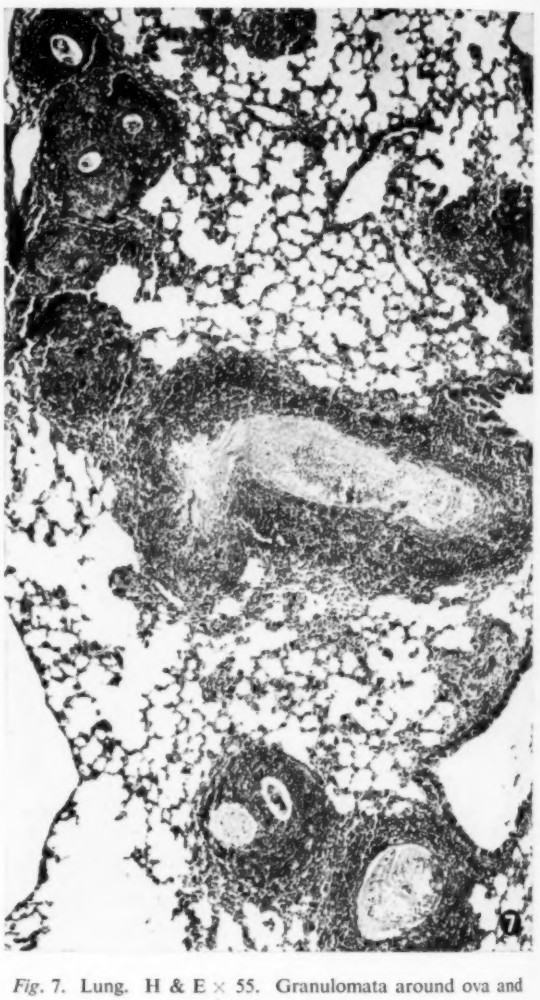

Fig. 7. Lung. H & E × 55. Granulomata around ova and adult worms

2. The pathogenicity of *S. bovis*, *S. haematobium*, South African *mansoni* and Egyptian *mansoni* for different laboratory animals is compared.

3. *Mastomys natalensis* is an excellent laboratory animal for experimental bilharziasis.

We are indebted to Mr. E. Hollingham, Mrs. V. Traill and Mrs. H. E. Paterson of the South African Institute for Medical Research and the South African Council for Scientific and Industrial Research for technical assistance; to Mr. D. H. S. Davis for supplies of *Mastomys natalensis*; to Dr. O. D. Standon of the Wellcome Research Laboratories for the original strain of Egyptian *S. mansoni* and to Mr. M. Ulrich for the photographs.

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PHENYLKETONURIA

A CASE REPORT IN A EUROPEAN CHILD TREATED WITH A DIET LOW IN PHENYLALANINE

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Kroonstad, O.F.S.

Phenylketonuria is characterized by mental deficiency and extra-pyramidal system involvement. It has been suggested that phenylketonuria, which is one of the inborn errors of protein metabolism, is due to an intoxication by phenylalanine, or one of its metabolites, and that the condition may be relieved by a diet low in phenylalanine, and any return to a normal diet would be likely to lead to re-intoxication.

The recognized inborn errors of protein metabolism concern the 3 amino acids: cystine, tyrosine and phenylalanine.

Normally phenylalanine, which is an essential amino acid, is converted to tyrosine, but in phenylketonuria, owing to the absence of a particular enzyme, the phenylalanine accumulates in the blood and cerebrospinal fluid and exerts a toxic effect. The phenylalanine is excreted in the urine unchanged or as phenylpyruvic acid, phenylacetic acid or phenyl-lactic acid. For the purposes of diagnosis and treatment the ferric-chloride test and chromatography are sufficient. The ferric-chloride test is an extremely easy screening-method: A few drops of 5% solution of ferric chloride are added to the fresh urine, and the appearance of a deep green colour within 5 minutes (sometimes opaque deep blue-grey, due to phosphates) is a positive result. No person of normal intelligence has been found to excrete the acid in the urine.

Fölling first described the disorder phenylketonuria in 1934. It is also known as phenylpyruvic oligophrenia, phenylpyruvic amentia, or imbecillitas phenylpyruvica.

The incidence is estimated at 4 per 100,000 population. There are about 1,600 cases in England. Phenylketonuria has been encountered in all European races, except Jews, but not in Negroes.

It is inherited as a recessive trait, and both sexes are equally affected. In affected families every child has a 1 in 4 chance of developing the disease.

About 85% of patients with this metabolic defect are so severely feebleminded (I.Q. 20-50) as to be classified as idiots or imbeciles.

CLINICAL ASPECTS

These children, apart from mental retardation and *petit mal* have the following characteristics: They tend to be attractive in appearance, with fair hair, blue eyes and heavy musculature, and are easily managed because of their apathetic behaviour. Eczema is common. The spacing of the incisors is wider than normal, and the circumference of the head is often a little less than that of a normal child of same age. Grinding of the teeth is common. Kyphosis or dwarfing may occur in later childhood, and the gait, when walking is possible, is clumsy, the body being held rather rigid and bent forwards. In most cases hypertonicity, ataxia and tremor resulting from extra-pyramidal involvement are present. Repetitive movements, especially of the fingers, are common; these are organized and not suggestive of a release of cortical control as in choreoathetosis. The physical examination reveals no characteristic lesion of the central nervous system or other abnormalities which might differentiate this group from the primary amentias.

Air encephalography has demonstrated atrophy of the cerebral cortex, especially of the frontal lobes—in some cases moderate dilatation of the ventricles and in others an increased amount of air in the subarachnoid space. Some cases show evidence of liver dysfunction. The electro-encephalogram shows evidence of epilepsy.

In phenylketonuric aments the urine test should be positive by the age of 3 weeks at the latest, but in some cases it has been demonstrated at birth.

PRINCIPLES OF DIETARY TREATMENT

The results of treatment by Moncrieff, Griffiths and Woolf[1] show that at least in some cases there is considerable intellectual improvement. Treatment must be started early.

In essence, the diet must be low in phenylalanine, but it must not be phenylalanine-free. Even a phenylketonuric child will not thrive on a phenylalanine-free diet. In order to achieve a diet low in phenylalanine, all proteins must have had this amino acid removed, and the only practical method is to use treated acid-hydrolysate of casein. In its normal state this hydrolysate does contain phenylalanine, but this is removed by passing the substance over charcoal. This also removes the amino acids tryptophane and tyrosine, which must then be replaced by the addition of the pure amino acids.

This acid hydrolysate of casein, refortified with tryptophan and tyrosine, is the basic protein material used in the diet, and is adequate for normal health and development. Fat is provided as vegetable margarine or 'butter', and carbohydrate as sugar, wheat-starch, gluten-free wheaten flour, or rice. This diet is poor in vitamins and salts, and these are therefore added. Some fruits and vegetables are allowed. Some phenylalanine is given as milk. The basic minimal requirement of phenylalanine is thought to be 1·1 g. per day. The phenylketonuric child needs then something less than this, say between 0·8 and 0·4 g. per day. Milk contains 0·8 g. of phenylalanine per 500 c.c. (540 c.c. = 1 pint).

After a week on the above diet, with about a half a pint of milk per day, the urine test should become negative. The milk may then be cautiously increased till the ferric chloride test is positive and then reduced

a little till the test is again negative. For further details of diet see Woolf, Griffiths and Moncrieff.[1]

CASE REPORT

The present case was treated for 6 months on a diet low in phenylalanine, during which time progress was dramatic. I believe this is the first discovered case to be treated in South Africa.

T.W., a European male child, was born on 2 October 1953, weighing 9 pounds; normal pregnancy and confinement. The parents were unrelated and there was no family history of mental abnormalities. Two elder brothers 5 years and 3 years of age were both normal. Slight jaundice during the first week of life. Breast fed for 2 months. First tooth erupted at 10 months. Two attacks of otitis media twice during first 9 months. Bowels regular, and appetite good.

At 3 months of age head-drops were first noticed—a sudden forward jerking of the head, accompanied by a blank facial expression—20-30 attacks daily. The child grew fat, lethargic and unresponsive, and suffered a lot from patchy eczema. As he showed no signs of progress the mother took him to a paeditrician at the age of 9 months (July 1954), stating that he was mentally and physically backward and basing her assumption on the following facts: Could not sit unsupported; could not take things in his hand or hold them; could not roll over onto his 'stomach'; could not fix his attention; lethargic; had shown some improvement on taking 1/5 gr. of thyroid twice a day; head-drops many times a day; cried a great deal; held up his head at 5 months and sat with support at 7 months. The paediatrician's report was that the clinical examination confirmed the mother's observations, and that the infant was obviously backward in that one could not fix his attention or get him to grasp any object, all of which pointed to a primary cerebral defect.

Lumbar puncture and air studies of the brain were carried out: CSF normal; W.R. Kolmer negative; Lange curve normal; air encephalography showed that the ventricles were centrally situated, normal in size and shape and well filled, and that there were extensive accumulations of air over the cerebral cortex, in the frontal, parietal and occipital regions on both sides, giving the impression of bilateral cerebral atrophy.

This then was the final diagnosis at the stage when the child was aged 9 months. The ferric-chloride urine-test for phenylpyruvic acid had apparently not been done at that time.

At age of 14 months, severe generalized seizures developed in addition to the *petit mal* attacks.

I saw T.W. for the first time on 22 March 1955, at the age of 17 months. He had been on ½ gr. of luminal b.d. for some months. He was having 1-4 major seizures every day, and 10-20 *petit mal* attacks daily. The major seizures lasted 5-10 minutes each, consisting of a series of fits with pauses of 10-15 seconds between each fit. The fits were typical of *grand mal* epilepsy, excepting that the child took on a '*salaam*' posture during each attack, and that the fit was preceded by a very sudden severe head-drop.

On examination he was a well nourished, attractive child with a ruddy complexion, blonde hair and blue eyes. Height 33 inches, weight 32 lb.

There was marked mental retardation. He was contented, apathetic and uninterested in his surroundings. He smiled occasionally for no obvious reason. He would not put out his hands to grasp any objects, nor would he hold an object put into his hands. When his attention was attracted to an object he appeared to have difficulty in focusing his eyes; he kept rolling his head from side to side, with his eyes in extreme deviation, while trying to focus on the object. He could follow a light with his eyes. The fundi were normal. He was not deaf and no speech nor babble was evident. He held his head erect and he could sit up unsupported, but was not very steady. He was able to turn over on to his back and *vice versa*. There was moderate hypotonicity of the extremities. The tendon jerks could not be elicited and the plantar reflex was flexor. Teeth grinding and repetitive organized movements of the thumbs were evident during most of the day.

The shape of the head was normal and the circumference was 19 inches. The hard palate had a moderately high arch. The

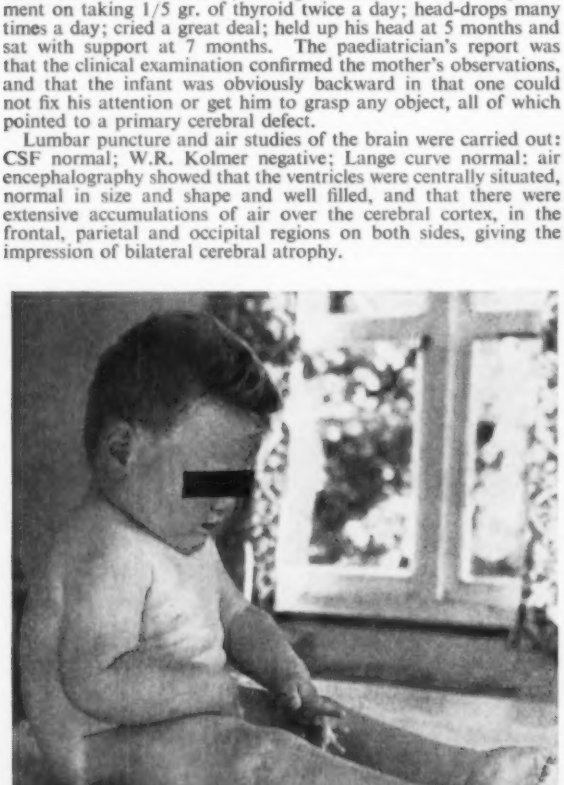

Fig. 1. Before treatment. Age 18 months.

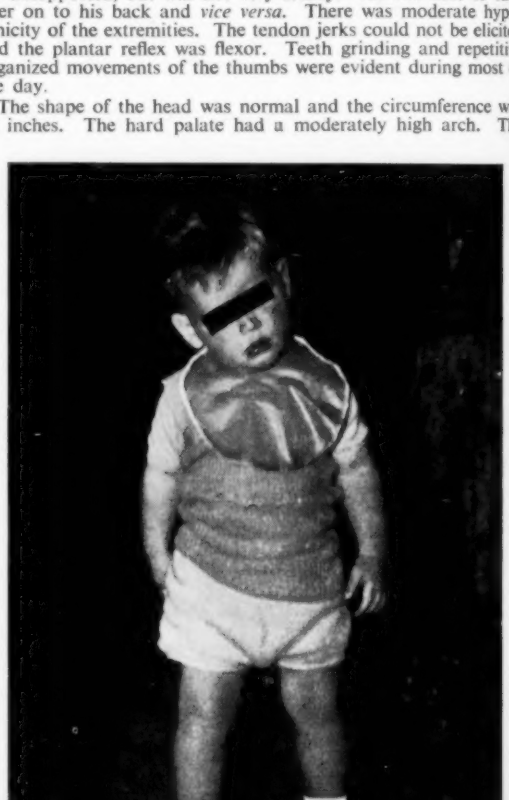

Fig. 2. After treatment. Aged 2 years and 6 months.

upper and lower two incisors were present; slight gap between the incisors. The shape of the eyes was normal; no squint, and no nystagmus. The fontanelles were closed. Patchy eczema of the face present.

Clinical examination of heart, lungs and abdomen revealed no abnormality. The electro-encephalogram was normal.

Urine: No sugar. No albumen. Tests for phenylpyruvic acid were consistently positive on a number of occasions. Biochemist's report: 'Chromatography on the urine of this patient showed a grossly excessive excretion of phenylalanine'.

The urine of the parents gave a negative ferric-chloride reaction.

Treatment

The diet was started on 27 April 1955 when the child was 18 months old, and the urine became completely negative for phenylpyruvic acid for the first time on 3 May. From 28 April up to 18 June he had only two small convulsions, and from then up to the present he has had no convulsions at all. The *petit mal* attacks diminished in number (to 8-12 daily).

He started to crawl from 7 August and took a few steps with support from 22 August. He took first a few steps alone on 11 September but, as the *petit mal* attacks caused him to fall, owing to momentary loss of consciousness, Mysoline tablets (I.C.I.), ½ tablet once daily, were started; this had the desired effect, and from 25 September there were no more *petit mal* attacks. He walked well from 1 October.

After the child had been on the diet for 6 months there was, in addition to the above developments, a marked improvement in his mental picture. He was bright and active, alert and very interested in his surroundings. He recognized his closer associates and was frightened of strangers. He started to make bubbling and crowing noises. The hair darkened considerably during treatment, and the eczema cleared. Movements of the hands were coordinated. There were no more repetitive thumb movements and teeth grinding had disappeared.

He has grown about an inch since the diet was started and his weight has remained constant.

The urine test was done daily in the management of the case, and whenever the test was positive it was noticed that he became unusually irritable. Curtailing the milk in his diet quickly made the test negative again.

DISCUSSION

The case is worth recording because, if the disease is diagnosed early, treatment can often bring good results. In this case there was considerable improvement after diet was started; the fits disappeared (the *petit mal* attacks required extra medication) and the improvement in the mental picture was dramatic. At the age of 17 months he was almost inert, unaware of his surroundings, and subject to frequent epileptic attacks. After 6 months of treatment he was walking about sturdily, free of fits and developing in all directions.

He is now 2 years old, and has the mental age of about 1 year. Treatment was started at 18 months of age, and whether this time lag in his mental development can ever be made up remains to be seen.

The *petit mal* attacks will probably not require extra medication as the child grows older on the diet.

When the condition was discovered the feeling was that the diet should be started, irrespective of the possibility of cortical atrophy, to see what improvement there would be. We do not know what changes take place in the brain after the diet has been continued for some time, and it would be interesting to see repeat air-encephalogram studies on these cases during years of follow-up.

The diet costs roughly £3 per week and, if this costly treatment is to be justified, it should be started early. Society may gain productive members if a look-out is kept for these cases. Screening tests on the urine of all babies should be made during the first few weeks of life so as to discover the cases at an early stage.

SUMMARY

A case of phenylketonuria treated with a diet low in phenylalanine is described. Mental progress was dramatic. All fits ceased. Normal physical health and growth were maintained. Mental deficiency and fits can be markedly improved on this diet.

It is suggested that the urine test should be made on all babies so as to discover the cases at an early stage.

I wish to thank Dr. R. Womersley of Queen's University, Belfast, for his advice in the treatment of the case, and D. Neill, Esq., Royal Victoria Hospital, Belfast, and Dr. B. M. Bloomberg of Johannesburg for the biochemical reports.

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AORTOGRAPHY: A STANDARDIZED TECHNIQUE FOR THE INVESTIGATION OF OBLITERATIVE VASCULAR DISEASE

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Aortography is rapidly becoming recognized as a valuable routine diagnostic procedure and is taking its place as an accepted method of investigation much as retrograde pyelography is used in the differential diagnosis of urological disease. The uses of aortography are:

1. To investigate the appearance of the aorta and its branches in vascular disease. It is certainly the most valuable single method available to us today and yields greater information than any other, not only on the state of the main vessels but on the collateral circulation as well.

2. To examine the vascular pattern in different abdominal organs. An abnormal pattern may be the first indication of a space-occupying lesion such as a cyst or tumour. For this purpose aortography may be used alone or in conjunction with such other investigations as barium meal, retroperitoneal air insufflation, hysterogram, etc. It is especially valuable in the investigation of kidney and retroperitoneal tumours and

may also provide important information concerning deep-seated growths affecting the pelvis, upper thigh, etc.

Lumbar Aortography

This paper is concerned primarily with the investigation of peripheral vascular disease by lumbar aortography, which may be achieved in 3 ways.

1. Direct percutaneous injection into the aorta (Dos Santos 1934). This is the method upon which the technique described in this paper is based.
2. *Via* a catheter passed into the abdominal aorta up the femoral artery or up the radial artery either after exposure of the latter vessels or percutaneously by means of a small trocar.
3. A method has even been described of puncturing the thoracic aorta via the oesophagus through an oesophagoscope.

From a practical point of view only the first two methods need be seriously considered, and familiarity with the first one (direct aortic puncture) has rendered the second (and more difficult) alternative unnecessary.

Femoral arteriography is not used in the investigation of arterial disease because of a number of disadvantages pertaining to this method:

1. Femoral arteriography will demonstrate only the vessels in the affected limb. No information is obtained regarding the state of vessels in the contralateral limb.
2. The vessel lesion may be above the site of femoral puncture and therefore not demonstrated (e.g. a frequent cause of claudication in elderly patients is thrombosis of the common or external iliac artery).
3. Femoral puncture is on occasion a difficult procedure, particularly in obese patients, and damage to the femoral artery itself may result. (While puncture of a healthy femoral artery is a simple procedure, it may be difficult to enter the lumen of a diseased and narrowed vessel.)
4. Thrombosis in the femoral artery, which is of relatively narrow calibre, may imperil the whole limb.
5. Aortography is simpler, safer and gives far more extensive information.

Standardization. In order to compare the state of the arterial tree in one patient and another or in the same patient on different occasions, a standardized procedure has been adopted by which a known amount of contrast medium is injected into the aorta in a fixed time and X-ray pictures of the limbs taken at standard intervals thereafter. In order to do this accurately some form of mechanical injection device is essential and a compressed-air pump is used which will constantly deliver 40 c.c. of 70% Pyelosil through a 16-gauge 16 cm. needle in 4 seconds.

Personnel. Five persons are required in order to carry out aortography by the method to be described:

1. The surgeon to pass the needle into the aorta, inject the dye and indicate to the radiographer at which time intervals X-ray exposures must be made.
2. Radiographer to make the actual exposures.
3. One assistant to move the X-ray tube from position 1 to position 2 after the abdominal plate has been exposed and to push the Potter-Bucky tray up under cover of the head-end lead apron.
4. An assistant to remove and replace X-ray casettes under the limb tunnel.
5. An anaesthetist.

Apparatus. The following are required:

1. The standard 500 M.A. X-ray apparatus with overhead tube and Potter-Bucky diaphragm.
2. Pressure pump.
3. Aortography needle.
4. A simple wood or hard-board limb tunnel to accommodate two 14 inch by 17 inch X-ray casettes end-to-end beneath the legs.
5. Seven 14 inch by 17 inch X-ray casettes, with string loops attached to facilitate rapid change between exposures.

A point has been made of using no apparatus which is not normally available or procurable in hospital. (A 200 M.A. X-ray machine with rotating anode may prove suitable.)

Anaesthesia. Short Pentothal anaesthesia is used as a routine in preference to local anaesthesia because the injection of a large quantity of contrast medium produces a transient burning sensation in the limbs and patients are inclined to move the legs involuntarily and thereby spoil the X-ray pictures. Each patient is tested for iodine sensitivity by the administration of 2 gr. of potassium iodide in 2 separate doses the day before examination, and by the intravenous injection of 2 c.c. of 70% Pyelosil a few minutes before being taken to the X-ray department. Premedication is with atropine alone or with atropine and one of the antihistaminic preparations which are reputed to reduce the incidence of unpleasant side-effects.

Technique

The patient is laid on the X-ray table in the prone position and so arranged that the abdomen and pelvis will be taken when the standard Potter-Bucky diaphragm is used. The thighs and the legs lie along the limb tunnel which bridges two 14 inch by 17 inch X-ray casettes laid end-to-end so that they can be rapidly changed without

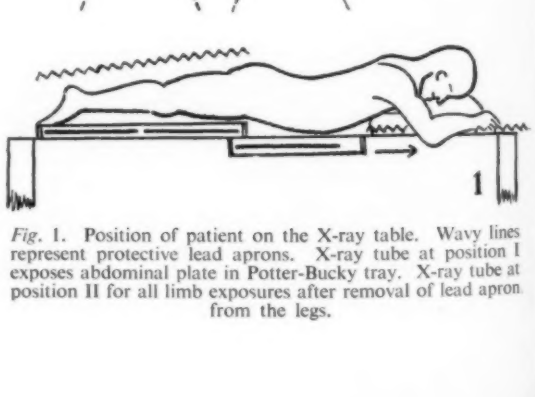

Fig. 1. Position of patient on the X-ray table. Wavy lines represent protective lead aprons. X-ray tube at position I exposes abdominal plate in Potter-Bucky tray. X-ray tube at position II for all limb exposures after removal of lead apron from the legs.

moving or disturbing the patient. The chest is supported on a low pillow with the arms extended above the head, which lies comfortably to one side with the airway assured. An important point in positioning is to ensure that the main arterial bifurcations fall distinctly upon one or other X-ray plate and are not obscured by the overlap of adjoining plates, for it is at these sites that gross pathological changes are usually demonstrated (viz. the aortic bifurcation, common iliac bifurcation, origin of the profunda femoris, and bifurcation of the popliteal artery). Feet and legs should be slightly inverted so that the projection of the tibial vessels is not obscured by bone shadows. The patient lies on a lead apron extending from the head end of the table to the level of his diaphragm (this is used to protect the abdominal plate when the Bucky tray is pushed towards the head of the table after the first exposure and during the exposures of the limbs). A second lead apron is now laid over the lower limbs from the fold of the buttocks to the toes (this protects the casettes in position under the limb tunnel and is removed immediately the first 'abdominal plate' has been exposed).

The X-ray apparatus is set for instantaneous exposure and the second position of the tube directly over the limb tunnel is predetermined and marked. Arrangements are now complete to proceed with the investigation.

Pentothal anaesthesia is induced and the aortography needle (16 cm. 16 gauge) introduced about 4 inches from the mid-line immediately below the 12th rib when puncture of the aorta above the renal vessels is intended, and midway between the rib margin and the iliac crest when puncture below the renal vessels is the object. The needle is introduced forwards, inwards and slightly towards the patient's head at an angle of approximately 40° to the horizontal, to pass in front of the transverse processes until the side of the vertebral bodies is reached. It is then redirected gently forwards to slide over the vertebral bodies and into the aorta, usually with a distinctly felt 'plop' which is not unlike the sensation experienced when entering the theca during lumbar puncture, but with rather more of a rubbery resistance. The stilette is withdrawn and blood flows in a steady stream from the needle. It does not spurt out in a jet as many imagine it should, but the stream pulsates visibly with the heart beat; blood from the aorta is also less bright than one at first expects it to be.

If there is any doubt about the accurate placing of the needle tip

(1) a syringe may be attached and free to-and-fro barbotage confirmed,

(2) a test dose of 5 c.c. of Pyelosil may be injected rapidly and a trial exposure made which will demonstrate the dye flowing down the aorta, or

(3) a blunt stilette may be passed down the needle and the far wall of the aorta palpated.

With experience it is seldom that the vessel is not accurately entered at the first attempt and these confirmatory measures are then unnecessary. The pressure pump is connected to the needle and when all is in readiness the surgeon opens the valve allowing the dye to enter the aorta under pressure. As the valve is opened the surgeon begins counting aloud and calls 'Take' for the first (abdominal) exposure when 40 c.c. of dye have entered in 4 seconds. The valve is then immediately closed, and on the call of 'Change' at 5 seconds, the Potter-Bucky tray is pushed to the head of the table under cover of the upper lead apron, the tube moved to position 2 over the legs and the lead apron removed from over the lower limbs. Counting continues aloud and at 10 seconds a second exposure is made, the exposed limb-casettes changed, and further plates taken at 15 seconds and at 20 seconds.

In practice the entire procedure including assembling the apparatus, positioning the patient and organizing a trial run to ensure that all assistants know their parts, takes approximately 20 minutes.

The procedure has been found to be simple and completely safe in patients of all ages and in varying states of health. It occasions no constitutional upset and no patient has been averse to having the procedure repeated where indicated.

By the method described a series of pictures is obtained demonstrating the entire arterial tree from the site of needle puncture to the minute digital arteries of the toes. The rate of blood flow can be compared between right and left limbs and between one patient and the next, because all factors such as timing, quantity of dye injected, etc. remain constant in every investigation.

Difficulties and complications of aortography. The following might be encountered:

1. Failure to enter the aorta. With experience this should not occur provided the needle is guided gently over the vertebral bodies.

2. In very stout people a 16 cm. needle may be too short.

3. Blood does not flow from the needle after an apparently successful puncture. Rotate the needle and move it gently 1/8th inch in and out. The bevel may be against the far wall of the aorta or impinging against a mural thrombus or plaque. (On one occasion when this difficulty arose, puncture at a higher level revealed a complete thrombosis of the aorta above the bifurcation; the needle had doubtless penetrated the solid segment.)

4. Leakage of dye outside the aorta in the retroperitoneal tissues or in the peritoneum. In spite of every care leakage does occasionally take place but, with the use of Pyelosil, occasions no harm apart from some abdominal discomfort or backache for a few hours.

5. Haemorrhage. No clinical evidence of haemorrhage from the aorta has ever been observed but, if lumbar sympathectomy is undertaken within a few days of aortography, a slight leakage of blood from the aorta may be evidenced by para-aortic retroperitoneal connective-tissue staining. No true localized haematoma has been found at operation.

6. Dislodgement of a mural thrombus forming an embolus into one or other of the lower limbs. This remains of course a theoretical possibility but has not occurred in any patient in our series.

Technical improvement such as the use of 2 X-ray machines and 36-inch casettes for limb exposures will improve the results obtained but the method described above and the apparatus used has purposely been kept

as simple as possible in order that the investigations may be carried out in any hospital.

For occasional aortography a 50-c.c. syringe may be used instead of a pressure pump and the injection made by hand; but where aortography is carried out as a routine investigation a pump is not only convenient but ensures delivery of a constant amount of dye in a fixed time.

X-Ray Details

1. *Apparatus.* Standard 500 M.A. machine with overhead tube and Potter-Bucky diaphragm. Cone removed from X-ray tube before investigation is begun. Tube set at maximum height from the table and the apparatus set for instantaneous exposure.

2. *Exposures.* (*a*) Abdominal plate. 100 K.V. for 0·08-0·1 seconds, using Potter-Bucky diaphragm.

(*b*) Limb plates. 65-70 K.V. for 0·08-0·1 seconds. (A Shaninda grid is fixed to the limb tunnel over the below-knee plate to avoid over-exposure at this site.)

SUMMARY

A method of lumbar aortography is described for use in the investigation of obliterative arterial disease affecting the lower extremities. Good X-ray visualization of the entire arterial tree from the level of the diaphragm to the digital vessels of the toes can be obtained. By standardizing the technique as described further useful information concerning the speed of circulation, state of collateral vessels, etc. becomes available.

The method detailed in this paper is based upon the technique used by Dos Santos in Lisbon. It was demonstrated to me by his first assistant. My thanks are due to the theatre staff and radiographers at the Andrew McColm Hospital, Pretoria, for their willing assistance. The pressure pump was constructed to specification by Messrs. Barton & Sons, Forrest Road, Edinburgh.

OBSERVATIONS ON NEUROMUSCULAR DYSFUNCTION IN THE ADDINGTON OUTBREAK

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Durban

This memorandum will discuss the neuromuscular dysfunction which occurred in the majority of cases affected by the so-called Addington disease. As an approach to so limited a field it is desirable to consider briefly certain relevant clinical features.

Introduction. In the early months of 1955, and merging into the tail end of an epidemic of poliomyelitis, about 90 nurses at the Addington Hospital, Durban, and 50 civilian cases were admitted to hospital suffering from a polio-like disease. As the nature of the disease unfolded it was realized that cases of a similar character had occurred sporadically for some months before the major outbreak.

Nature of the Disease. A tentative designation of encephalomyelitis is convenient. As in poliomyelitis, onset was abrupt, with constitutional symptoms and motor paresis. But at the same time, pain was a prominent symptom, usually peripheral and in many cases protracted and severe. Moreover, the paresis did not conform to a lower-motor-neuron lesion.

Clinical Features. Constitutional symptoms included headache, prostration, malaise and mild pyrexia. Mild emotional disorder was usually expressed as euphoria, but mental depression was also noted, particularly in the later chronic stages, in which period ready fatigue and inability to concentrate were also evident. Motor involvement resulted in paresis of one or more limbs. Pain was liable to have a distribution similar to the coexistent paresis. A cardinal and confusing factor has been the variable nature of the disease, both in terms of severity and also in terms of the distribution of lesions in the selective focal points of the central nervous system. Thus, either constitutional symptoms, or motor symptoms, or sensory symptoms might predominate, and conversely one or more of these components might be minimal or absent.

It is clear therefore that the major presenting signs and symptoms are subject to considerable variation.

Course of the Disease. Onset has for the most part been abrupt. On the clinical evidence it would appear that patients progress through 3 fairly clearly defined stages, viz. the acute or active stage, the convalescent stage, and the chronic stage. It must be emphasised that the duration of these phases is variable, and has been closely related to the severity of the symptoms. In mild cases symptoms have completely cleared up after a week or two; but in many patients symptoms have smouldered for as long as 3 months, and true relapses have occurred as late as 10 weeks after onset. After subsidence of the active phase, there has been rapid and at times dramatic improvement. Today, some 4 months since the first cases were notified, a residual core of patients remains hospitalized, or physically handicapped, and the long-term prognosis cannot at this stage be firmly established.

Relapses. It is suggested that relapses have been of two different types. Firstly, a minor set-back of a transient nature, in which the patient rapidly returns to the pre-relapse level. A similar phenomenon is known to occur during the convalescent stage of poliomyelitis and is no more than fatigue reaction. In the second type of relapse there is evidence of renewed activity of the causative pathological process. We have seen, for example, severe pain, complete paralysis and cold sweating skin in limbs which had almost returned to normal. Hitherto unaffected limbs have also become

affected. In this type of relapse recovery has followed the tardy and erratic course of an initial attack.

It is natural that many factors have been incriminated as causative of these severe relapses, but in some instances they occurred in patients under conditions of strict bed-rest.

Hysteria. As there have been overt and covert references to hysteria, this subject merits brief discussion.

Mass hysteria is surely an untenable hypothesis in view of the consistent pattern of signs and symptoms occuring in cases coming from widely scattered points in the Durban area. Encephalitic symptoms such as euphoria, mental depression, fatiguability etc. have been a prominent feature, the locomotor disability is of a complex nature and paresis is related to volitional initiation of movement. These considerations complicate a satisfactory assessment of hysteria. In many cases a psychogenic overlay could not be ruled out.

NEUROMUSCULAR DYSFUNCTION

Some degree of muscle weakness has been present in the majority of cases, one or more limbs being involved, and the legs being affected more often than the arms. In a minority of cases, paresis has occurred in muscles of the back, abdomen and neck. Distribution has been asymmetrical. At onset paresis was severe and widespread, tending to involve all the joints in a limb rather than selected muscle-groups. In a few patients spasticity was present. With the recession of the acute active stage recovery of movement has been rapid for a few days. In mild paresis the improvement might be dramatic and complete, but in the more severely paretic this recession of symptoms has come to a halt at a point short of full recovery, and beyond this level progress has been tardy and subject to relapses.

When the initial diffuse weakness has receded in the lower limb, paresis has remained mainly in the hip flexors, knee extensors, and ankle dorsiflexors. In the wards the unsupported foot in a position of equinovarus was familiar, and foot-drop has been a practical difficulty in many ambulant cases. The particular pattern of movement has been sufficiently constant to form a useful guide to diagnosis. For example, with the patient lying supine and trying to raise the straight leg, there is a negative phase in which no movement takes place. As hip flexion gets going it does so in jerky fashion, with a course tremor of the whole limb. When the maximum range of hip flexion has been established, it is found that the power of the muscle is good and is able to resist counter-pressure. However, if resistance is applied at the outset, a light finger pressure is sufficient to prevent active movement.

Reflexes have for the most part shown little change; possibly they have been slightly depressed, and in patients showing spasticity clearly increased knee-jerks have been observed and have persisted. Wasting has been conspicuously minimal even after prolonged bed rest.

Electro-Diagnosis. Full investigations by current methods of strength duration curves and accommodation ratios were done on over 20 of the nurses. A smaller group of civilian cases were also investigated during the chronic established phase. These investigations failed to show any significant deviation from normal and may be taken to exclude destructive denervation of the lower motor neuron.

ILLUSTRATIVE CASES

Except for case No. 7 and 8 all the patients cited are young nurses.

Case 1. (G). First seen 2 months after onset, at which time was making good recovery from original paresis of left arm and left leg. Relapse occurred with abrupt onset, weakness of left arm only, with cold sweating of skin of hand, severe pain in shoulder and inability to move more than a flicker of fingers. Recovery of left arm has been slow and marked paresis remained 4 weeks later.

Case 2. (F). Ten weeks after onset slight paresis of left arm, gross paresis of left leg, no active movement against gravity, coldness of left foot. Three months after onset fitted with long caliper and getting about with aid of stick.

Case 3. (B). At 10 weeks after onset, when slowly recovering from paresis of left arm and both legs and intractable headaches, suffered relapse. Right arm affected for first time. Moderate paresis but no skin coldness. At 12 weeks still a bed patient because of constitutional symptoms.

Case 4. (W). First seen 9 weeks after onset, mild paresis of left arm, both legs splinted, complaining of cramps in legs, only a flicker of active movement in toes. Mild constitutional symptoms. Responded well to active assisted movement, and within 3 weeks was ambulant and able to leave hospital.

Case 5. (M). Seen 6 weeks after onset, original paresis of right arm and right leg, later onset of paresis in both legs. At this stage marked paresis of left leg with cold foot and foot-drop; was fitted with short iron and discharged at about 11th week.

Case 6. (H). Eleven weeks after onset showed constitutional symptoms, inability to concentrate, mild paresis in both legs, day-by-day fluctuation. When asked to raise right leg against resistance developed gross tremor which spread to left leg. Motor symptoms were subordinated to emotional state.

Case 7. (F). Onset with mild malaise (did not then or afterwards stop work), pain and paresis of left leg, pain at first simulated sciatica. Slow improvement of paresis over period of 3 months. Eight weeks after onset developed pain in left arm.

Case 8. (Mrs. B). Severe constitutional and motor involvement. Now, 10 weeks since onset, paresis of both legs, more marked in the left. External rotation of left hip and correction is painful. Is now ambulant.

DISCUSSION

With the sudden impact of large numbers of cases of an unidentified disease, perplexing problems of diagnosis and management arose. Early anticipation of a clear-cut sequence of acute, convalescent and chronic stages have not been fulfilled. Indeed, the only constant feature has been the erratic course. With regard to morbid processes in the central nervous system, a clearer concept of their distribution and duration is fundamental to diagnosis and rational treatment.

In the early stages complete mental and physical rest are of first importance and experience has fully endorsed this principle. With the recession of symptoms we have been faced with the problem of how best to achieve the maximum recovery in disabled limbs in the shortest possible time. Essentially this amounts to the balanced application of rest and exercise, with due regard to the general condition of the patient. Appraisal of the course of paresis cannot be divorced from the concomitant emotional constitutional background.

It is now fairly well established that the answer to the therapy problem lies somewhere between the two

extremes of over-zealous premature activity and unduly prolonged immobilization.

There are grounds for diversity of opinion on the degree and duration of splinting of limbs, just as is the case in the management of poliomyelitis. An objective analysis of cases treated with carefully supervised re-education of affected limbs does not indicate that this procedure has been other than helpful. Insistance on the dangers of exercise has created in the patient a resistant and apprehensive attitude that has hampered supervised re-education of movement at a later stage. There are rational grounds for the introduction of carefully-graduated remedial exercises at an appropriate stage during recovery, with the object of facilitating volitional movement.

SUMMARY

Neuromuscular dysfunction as it occurred in the Addington outbreak is described. Measures for physical rehabilitation are considered against the complex clinical pattern into which they had to be integrated.

July 1955.

MAN AND HIS ENVIRONMENT

A WHO SEMINAR ON ENVIRONMENTAL SANITATION IN AFRICA *

A seminar on environmental sanitation in Africa, organized by the World Health Organization under the auspices of the Government of Western Nigeria, was held at Ibadan, in the magnificant buildings of the Ibadan University College, from 12 to 17 December 1955. The seminar was attended by specialists, medical officers, engineers and health educators, not only from Africa but also from Europe and the Americas. It was opened by Sir John Rankin, Governor of Western Nigeria, after which Prof. O. A. Ajose, Acting Vice-Principal of the University, welcomed the participants. Dr. Thomas Evans, Deputy-Director of WHO for Africa, expressed his gratitude on behalf of the Organization. The seminar was held under the chairmanship of Médecin-Général M. A. Vaucel, Inspector General of the Overseas Pasteur Institutes (France).

What is environmental sanitation?

In its last report, the WHO expert committee on environmental sanitation gave the following definition: 'The control of all those factors in man's physical environment which exercise or may exercise a deleterious effect on his physical, mental or social well-being'. Environmental sanitation therefore consists of all measures aimed at improving the physical environment of man, in order to ensure his physical, mental and social well-being. The word 'sanitation' in the WHO sense is not restricted to water supplies and refuse and water disposal, as the usage is in some countries.

Man and his environment

For several hundred years, the close relationship has been realized between man and his surroundings, which may or may not affect his health or comfort. A striking example is the word *Malaria* (bad air) which the Romans gave to certain areas because of the frequency of chills and fever. Similarly the theory of fetid miasms persisted until the 19th century. This relationship between man's environment and disease today constitutes the science of epidemiology, through which alone we can trace the origin and extension of a disease, and devise practical measures for combating it.

The lack of knowledge of the part played by impure water in the spread of disease contributed vastly to the epidemics of past years. It was during the cholera epidemics of 1835-66 in London that Dr. John Snow made history by taking away the handle of the water pump supplying part of the town, in an attempt to check the disease, thereby acknowledging the relationship between water and cholera.

Environmental Sanitation is still in the pioneer stage

Today man's physical surroundings in many countries oppose a decent way of life, hampering his social and economic development and depriving him of his health, dignity and *joie de vivre*. Though the situation has often been improved in the towns by communal operations frequently imposed by the fear of epidemics in Africa and Asia the situation in rural areas has remained largely unchanged. In certain regions, attempts at improvement which have not been understood by the people have failed. Thus certain rural populations still used the river as the source of their water supply, despite the efforts and time this entailed, instead of using the costly wells dug within the limits of the village. In other areas, the installations (for instance the pumping system of a well) proved to be too fragile and had to be abandoned through lack of local maintenance and repair facilities. Elsewhere, the measures taken proved to be contrary to the local traditions and beliefs of the population.

The sanitation pioneers nevertheless find the incentive to pursue their task in the fact that, until very recently, a similar situation existed in many parts of Europe and Northern America. The participants in the WHO seminar have therefore emphasized two very important considerations in environmental sanitation: (1) calling upon the local population in order to ensure their cooperation, and (2) the possibility for these populations, even among poorer elements, to pool their resources in order to help themselves.

Environmental sanitation should not be imposed from outside

Besides from a small number of failures, there are numerous cases where the call for improvement of living conditions originates from the population itself, a call which often follows improved conditions in the neighbouring villages.

Example is still the best propaganda, but in certain cases where results are slow and less spectacular, the presence of a health educator is most desirable. Before attempting to improve a given situation to meet the demand of the local population, it should first be ascertained how these changes will be accepted, and whether good use will be made of the proposed improvements. Those concerned should be consulted at the outset of operations for, except in certain cases where the urgency calls for immediate measures, environmental sanitation should not be imposed from the outside. The people concerned should participate in the birth of a project, which is the best way of ensuring their collaboration in its implementation.

Every occasion should be used to develop health education among the populations. To be satisfactory, this education should fall within the framework of other and less theoretical activities, aimed at bringing immediate relief to the suffering of the populations. A good method is to establish demonstration areas and pilot projects, where people can see for themselves the difference in living conditions.

The women should never be left out of these activities. Their role in the community is important, because of the love and the care with which they bring up their children. In Africa, no sanitation activity can be successful unless the women are also called upon. They form the nucleus of family life.

No community is too poor to contribute the material and the labour for the creation of certain essential sanitary facilities; for instance, a water supply system or the construction of latrines. The authority involved should, however, make a preliminary study of the resources of the community and the extent of the work to be carried out, to ensure that the contribution required

* Wld. Hlth. Org. Press, December 1955.

from the community does not exceed their social and economic possibilities. The material and equipment used should be both simple and easy to maintain. If the installations are discarded at a later date, the funds involved are lost.

The initiative of the rural population should, however, be encouraged by the higher or central authority, which should put at their disposal the funds necessary for the launching of the project, and the advice and technical assistance of its medical officers and the engineers. Long-term loans, or loans without charge can also be granted to communities which have shown goodwill and eagerness in improving their living conditions. In the field of environmental sanitation, it is often easier to start from zero rather than to improve unsatisfactory existing conditions. Similarly, it is preferable to gain the confidence and the interest of the population rather than to impose certain laws.

Several participants to the seminar expressed their doubt as to the applicability of 'Western' methods in Africa. Hence, in their opinion, the whole problem should be reviewed from the very beginning, so as to bring to the African population what *they* think they need and not, as they have stated themselves, what *we* think they should have.

A way of life

Several participants put forward the recommendation that the environmental sanitation services Should be *permanent* services, growing with the community in order to meet any new and different needs. Environmental sanitation should be a 'way of life'. Sanitation is not a means in itself, nor can it progress alone. In Africa, public health and environmental sanitation should have priority in all development programmes, in order to create the environment necessary to progress. Measures aimed at improving the environment should be planned at the outset so that future agricultural, industrial and other activities may expand in order to bring social and economic prosperity to the continent. The public-health teams, which have contributed greatly to bring about the present living conditions in Africa, have a still greater responsibility for the future. This challenge is linked to the general principles of WHO that health is 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.

Practical measures

Progress in sanitation in the underdeveloped areas is necessarily slow. Its significance must be learned, habits changed; in short, it is a matter of education. No very great improvements, especially in the rural regions, may normally be expected in less than a generation, because they must depend primarily upon the rising generation. However, certain practical measures can be applied as from now. They are essentially the following:

(*a*) Recognize the real benefits of sanitation to the health and well-being of the people.

(*b*) Establish a sanitation unit within the national health service of the country, commensurate with the country's needs and resources, and staff it with personnel competent to plan and direct all phases of work in this field.

(*c*) Integrate sanitation proper with other public-health undertakings, and see that 'first things come first' in the assignment of priorities.

(*d*) Develop a long-range plan of sanitation for the country as a whole, into which projects and programmes may be logically fitted as to time and place.

(*e*) Realize that it is always possible to do *something* helpful in environmental sanitation under *any* conditions and under *any* budget—and that the simplest things are usually the most important.

(*f*) Select a point of beginning—always the most difficult step in such an undertaking—and outline an orderly progression of work and objectives.

Man cannot be considered separately from his environment

Most epidemic diseases which are prevalent in Africa (malaria, bilharzia, yellow fever, sleeping sickness, onchocerciasis and other filariasis, dysentery, etc.) could be reduced through effective measures with regard to the environment, since environmental sanitation includes, in its broadest sense, water supply, insect control, disposal of excreta, and still other problems, if only the more elementary ones such as hygiene of the body and of man's dwellings. Man cannot be considered separately from his environment. It is useless to cure a man if he returns to an unhealthy environment.

Among all the efforts undertaken during what might be called the modern era in Africa, i.e. during the last 50 years, the most successful have been accomplished in the field of public health. They have greatly contributed to the development of the vast territories previously unable to progress on account of the prevalance of grave but preventable diseases, and it is only just that tribute should be paid to those who have devoted their lives to discovering and improving the methods of prevention of these diseases. This task continues and still calls for sustained and devoted work for, in spite of the success which has been achieved, public-health problems remain of extreme importance in Africa, closely related to the social and economic development of the continent. The training of sanitary personnel in sufficient number to cope with their task will ensure the permanence and the continuation of this progress. The field of environmental sanitation, because of its complexity and its extent, calls for competent personnel with thoroughly humanitarian qualities. Environmental sanitation should not only protect man against disease, but also safeguard his dignity, his comfort and his *joie de vivre*.

NATIONAL CANCER ASSOCIATION OF SOUTH AFRICA

NATIONAL CANCER FUND

As an outcome of the activities of the National Cancer Fund Appeal Committee under the Chairmanship of Dr. H. J. van Eck a sum of £300,000 is at present available to the National Cancer Association of South Africa. The money will be utilized in three main directions:

(1) Research into the cancer problems in South Africa.

(2) Propaganda designed to educate the public and the medical profession in the cancer problem.

(3) Assistance towards improved facilities for cancer sufferers.

Various sub-committees drawn from all parts of South Africa have been appointed to deal with the different aspects. Their recommendations, after due deliberation by the Council of Management of the National Cancer Association, have been submitted for approval to the Board of Trustees of the National Cancer Fund. The latter body is representative of all four provinces and is composed of prominent public men who have agreed to serve in an honorary capacity on the Board.

With the exception of a very small secretarial staff at the head office of the Association, all the work done on its behalf is carried out by men and women who give their services in an honorary capacity and in addition to the many other duties which most of them have. As a result practically the whole of the sum collected will be devoted to cancer research, education and improved facilities and relief.

For the first year of its activities the National Cancer Association intends to devote the following sums towards its objectives:

Fundamental, clinical and statistical research ..	£40,000
Professional and public education and propaganda and relief to cancer sufferers	28,000
Contingencies	5,000

The amount spent upon cancer relief will depend upon the demands received, and no accurate forecast of this amount can be made at present.

In addition to these sums a small amount has been devoted to

assisting South African scientists in making contact with their fellow workers in other countries. A Johannesburg pathologist was recently assisted to attend the 2nd International Congress of Neuropathology in London at which he presented a paper demonstrating the marked racial differences in brain cancer in the South African Bantu and Europeans. A Pretoria specialist has been assisted to obtain special training in cancer diagnosis in order that newer methods may be applied in this country. Two Johannesburg medical men were assisted during 1954 to attend an international conference in the USA, where they presented papers on special aspects of liver cancer in the South African Bantu. They not only placed the South African position before other scientists but they also brought back valuable knowledge and information to their colleagues in South Africa.

At the recent South African Medical Congress held in Pretoria the National Cancer Association gave financial assistance towards the cost of bringing to the Congress 4 prominent and internationally famous workers in the cancer field. These four scientists not only gave numerous papers and joined in the discussions at the Congress but also lectured to the public in Pretoria, Cape Town and Johannesburg on the most recent advances in cancer research.

In these, and many other ways, the National Cancer Association of South Africa intends to use the funds so generously donated for the benefit of those who gave them.

IN MEMORIAM

DR. PETER ALLAN

Dr. B. Maule Clark, Acting Secretary for Health, writes: It was with very deep regret that the members of the staff of the Union Health Department learned of the sudden death of one of its former chiefs, Dr. Peter Allan, who died on 10 January 1956, at Hermanus, Cape Province.

Dr. Peter Allan

Dr. Allan was born in Scotland in 1886 and was educated in Edinburgh. He graduated in medicine at Edinburgh University in 1910 and thereafter had considerable experience in tuberculosis control, working under the late Sir Robert Philip, a world authority on the disease. Throughout Dr. Allan's long career in public-health work tuberculosis always remained his greatest interest. During the First World War he served in the Royal Army Medical Corps in France for 2 years.

Dr. Allan's association with the Union Health Department dates from 1920, when he was selected to come to South Africa in connection with the establishment of Nelspoort Sanatorium in the Karroo, which was to be the Department's first tuberculosis hospital. While the sanatorium was being built he was employed as a medical inspector for tuberculosis and got to know South African conditions well.

During this period he conducted a tuberculosis survey of the Union and in 1924 the result of this investigation was published as a valuable report entitled *Report of Tuberculosis Survey of the Union of South Africa.* He went to Nelspoort when it opened in 1923 and was responsible for starting the work of the sanatorium. He became its first superintendent, a position which he occupied with distinction for a long period, being greatly beloved by the many patients who passed through his hands.

From 1927 to 1930 Dr. Allan was seconded to the Tuberculosis Research Committee, which had originally been established by the Transvaal Chamber of Mines and was later expanded into a Joint Committee by incorporation of representatives of the Union Government. Dr. Allan's special knowledge of the disease and his previous experience in carrying out a tuberculosis survey of the Union fitted him admirably for the position which he was now called upon to occupy—that of Field Research Officer to this important Committee. In this capacity Dr. Allan played a very active and important part in the work of the Committee whose voluminous report, entitled *Tuberculosis in South African Natives with Special Reference to the Disease amongst the Mine Labourers on the Witwatersrand,* was published by the South African Institute for Medical Research in 1932 and constitutes a most valuable and comprehensive document on the subject.

Incorporated in this report is a short account of Dr. Allan's previous survey of tuberculosis in the Union, which was published in 1924, while Chapter V of Part II of the Report of the Tuberculosis Research Committee is a most interesting account of the field investigations conducted by Dr. Allan in the Native territories, especially the Transkei and Ciskei, from which so many of the mine Native labourers are drawn, during the 3 years he was seconded to this Committee.

In 1930 Dr. Allan again returned to Nelspoort, where he remained as medical superintendent for another 5 years, until in 1935 he was promoted to the post of Assistant Health Officer in the Cape Town regional office of the Department. In 1937 he was further promoted to the post of Deputy Chief Health Officer in charge of the Department's Cape regional office. He was also appointed Deputy Director of Medical Services for the Cape Command.

When the post of Secretary for Health and Chief Health Officer for the Union fell vacant in 1940, Dr. Allan was appointed to it and occupied this position until his retirement from the Public Service on reaching the age of 60 in 1946. This was a period of great strain and difficulty. There was a serious shortage of manpower, owing to war conditions, and the Department of Health was hard pressed to carry on its essential services with a depleted staff. In particular, the release of medical personnel for military service created difficulties for those who had to administer the essential civilian services. And throughout practically all this period Dr. Allan was responsible for the running of the Department; he was responsible for seeing that our Departmental hospitals, our district-surgeon services and our many other health services were carried out efficiently.

His devotion to duty, his friendly human interest in all those with whom he was associated, and particularly those working under him, and his unfailing sense of humour, will always be remembered by those who had the privilege of being on his staff during those trying years. Dr. Allan was essentially a big man; exceptionally big in physical stature and big-hearted, very kindly and generous in outlook. He was much loved by those members of the staff with whom he came in contact.

After his retirement from the post of Secretary for Health in 1946, instead of taking a well-earned rest as he might have done, Dr. Allan continued to serve the Department in a temporary capacity and gave his services unstintingly in the cause he loved so well, the control of tuberculosis. For over 2½ years after his retirement he filled the important position of regional tuberculosis officer in the Western Cape and at the same time was medical superintendent of Westlake tuberculosis hospital. As the first medical superintendent of this hospital Dr. Allan played an important part in its establishment and development. The Department was thus able to make good use of his exceptional knowledge and experience in this particular field. He was also appointed by the Government as chairman of a commission to enquire into the occurrence of certain diseases, other than silicosis and tuberculosis, attributable to the nature of employment in and about

mines. In later years and right up to the onset of the serious illness which finally caused his death he assisted the Cape Town Municipality and the Cape Divisional Council in the running of their tuberculosis clinics.

Dr. Peter Allan will be remembered as a Secretary for Health and Chief Health Officer for the Union who held that important post with distinction for 6 difficult years. He will also be remembered as a skilful clinician and medical superintendent who was responsible for the care of very many patients suffering from tuberculosis over a long period of years. But perhaps even more than anything else he will be remembered as a great-hearted, kindly, generous and lovable character with a great fund of affection for his fellow men.

Dr. F. O. Fehrsen writes: I have been privileged to have known Peter Allan for the best part of 35 years and I welcome this opportunity of paying a sincere but very inadequate tribute to his memory. I remember very clearly our first meeting at Beaufort West, where I had recently started general practice and where he had just arrived to launch the Nelspoort Sanatorium as its first medical superintendent. He was just bubbling over with enthusiasm to get started.

To talk about Nelspoort Sanatorium is indeed to conjure up memories of Peter Allan. He became almost a legendary figure at this lonely Karroo sanatorium. From the outset, this burly Scot enjoyed the respect, confidence and affection of many hundreds of patients and the farming community of the surrounding district. He possessed a keen sense of humour and was an outstanding raconteur.

Apart from his first-class clinical skill, it was the qualities of cheerfulness, warmth, sympathy and good fellowship which meant so much to the patients who passed through his hands. As a physician he was happiest when actively attending patients. It is perhaps not generally appreciated that whilst Peter Allan achieved the highest rank as a medical administrator, his first love was always for the humanistic side of clinical medicine, and I know he often expressed a nostalgic wish to get back to Nelspoort.

There is little doubt that it was in the living art of medicine that he excelled, and to which his loss will be felt by his colleagues and the thousands of patients who passed through his hands. After his retirement as Secretary for Health, he threw himself with almost youthful enthusiasm into the work offered him at the various tuberculosis clinics, and I know he was singularly happy to be back at the work for which he had originally come to South Africa.

It was whilst he was actively working at the clinics that he suffered his first and severe coronary attack. He faced this misfortune with characteristic fortitude and patience. He always spoke hopefully of the day when he would be fit enough to get back to his patients. But this was not to be, and whilst at Hermanus, where he had just arrived to convalesce, he was stricken with a final and fatal attack.

Peter Allan was the best of hosts and his company was full of kindness and humour. His passing is a great loss to medicine, but it will be amongst the legion of grateful patients that his memory will endure the longest. He is survived by his widow, 3 sons by his first marriage and by his stepchildren, to whom we extend our deepest sympathy.

PASSING EVENTS : IN DIE VERBYGAAN

The next meeting of the Cape Town Paediatric Sub-Group will be held at 8.15 p.m. on Friday, 3 February 1956, in the Physiology Lecture Theatre, Medical School, Mowbray. The film 'A Two-year Old goes to Hospital' will be shown.

The Annual General Meeting of the Sub-Group will be held at the conclusion of the ordinary meeting on 3 February 1956, in the Physiology Lecture Theatre.

* * *

The Empire Medical Advisory Bureau (British Medical Association) has published a summary of regulations for postgraduate diplomas and courses of instruction in postgraduate medicine available in Britain. The Medical Director of the Empire Medical Advisory Bureau is Brigadier H. A. Sandiford, *M.C.*, M.B., Ch.B., D.P.H., British Medical Association House, Tavistock Square, London, W.C. 1.

* * *

Dr. J. B. Selkon was invited by UNESCO to read a paper at the meeting on Cell-Growth Research which was recently held in Paris. The subject of his paper was 'The Effects of Immunization on the Treatment of Tuberculosis'. Dr. Selkon, who is the son of Dr. J. M. Selkon of Sea Point, Cape, qualified at the University of Cape Town in 1950. He is at present with the Medical Research Council at the Hammersmith Postgraduate Hospital, London.

* * *

The International Association of Fertility and Sterility will hold its 2nd World Congress from 18 to 26 May 1956, at Naples. All those interested in the problems dealt with by the Association, in the medical, veterinary and biological field, are invited to attend.

* * *

Poliomyelitis Vaccination in America. The US Department of Health, Education and Welfare report that the incidence of poliomyelitis has been cut 25-50% among children receiving the Salk polio vaccine as compared with non-vaccinated children of the same age. Until December 1955 most of the 7 million vaccinated children in the 5-9 years age group had received only one injection of the vaccine. Enough vaccine, however, has now been produced to give second injections to 3/4 of all the 15,900,000 American children in the vaccination age bracket.

No cases of poliomyelitis associated with vaccine have been reported since the revision of the production and testing of the Salk vaccine last May.

Dr Jonas Salk is planning to test a number of vaccine preparations that appear to be more potent than those he has worked with previously.

* * *

Dr. Sydney B. Cooper, M.B., Ch.B., M.R.C.O.G., is starting in practice as a specialist obstetrician and gynaecologist at 5051 Dumbarton House, Church Street, Cape Town, on 1 February 1956. Telephones: rooms 36203, residence 53884.

* * *

Antibiotics At the 3rd International Symposium on Antibiotics, recently held in Washington, USA, more than a dozen new antibiotic drugs were described, including some that showed promise against fungal infections. Stress was laid on the value of tetracycline, which, *inter alia*, had been found effective in trachoma. It has been reported that tetracycline has certain advantages over the chemically-related chlortetracycline, such as lower incidence of toxicity and greater stability.

* * *

Research Forum, University of Cape Town: There will be a special meeting of the Research Form in the A Floor Lecture Theatre, Groote Schuur Hospital on Tuesday, 7 February at 12 midday, when Dr. B. Bronte-Stewart will consider 'The Effect of Feeding Fat on the Serum Cholesterol'.

On Tuesday, 21 February at midday in the same place, Dr. O. Budtz-Olsen will speak on 'Haematological Odds and Ends (including Sedimentation Rate, Uropepsin and Haemoglobin)'.

The Research Forum will, in general, be held on the 1st Tuesday in every month during University Term throughout 1956. General practitioners and other workers outside G.S.H. are cordially invited.

* * *

University of Cape Town. Professor Sir Robert Macintosh, Nuffield Professor of Anaesthetics at the University of Oxford, who will be visiting Cape Town at the invitation of the University, will give a lecture in the Physiology Lecture Theatre, Medical School, Mowbray, at 8.15 p.m. on Wednesday, 8 February on *Anaesthesia*

in General Practice. All members of the medical profession are invited by the University to attend.

* * *

Union Department of Health Bulletin. Report for the 7 days ended 12 January 1956.

Plague: Nil.

Smallpox, Cape Province: No further cases have been reported from the Cape Town municipal area and the Beaufort West district since the notifications of 14 December 1955. These areas may now be regarded as free from infection.

Typhus Fever, Cape Province: One (1) Native case in the Queenstown district. Diagnosis confirmed by laboratory tests. *Natal:* The two European cases reported on 28 December 1955, now proved not to be louse borne typhus.

Epidemic Diseases in Other Countries.

Plague: Nil.

Cholera in Dacca (Pakistan).

Smallpox in Kabul, Kandahar (Afghanistan); Moulmein, Rangoon (Burma); Ahmedabad, Allahabad, Bombay, Delhi (India); Dacca (Pakistan); Huê (Viêt-Nam).

Typhus Fever in Baghdad (Iraq); Cairo (Egypt).

CORRESPONDENCE : BRIEWERUBRIEK

MITRAL VALOOTOMY

To the Editor: It is with some reluctance that we reply to the letter written by Drs. Zion and Bradlow,[1] for we feel that the facts, as published, speak for themselves. However, as we wish to correct an error in Table IV of our article,[2] we take the opportunity of answering serially the points raised:

1. We appreciate the difficulty of grading disability accurately, for this, of necessity, must be done on the patient's symptoms rather than the signs. However, there is little difficulty in deciding whether a patient is in grade 4, since according to custom, patients with medically intractible congestive failure fall into this category. As explained in the text, all patients, by routine, were treated before being submitted to surgery, and naturally grade-4 patients received more intensive treatment than average. We too, in turn, are surprised to learn that in the large series of 200 cases referred to by Drs. Zion and Bradlow only 6 were in grade 4, whereas in our small series of 75, 13 were in this grade. Naturally, if one is interested in keeping the mortality figure down, only the best-risk cases are chosen and many patients who might benefit are refused surgery. It is of interest to note that our mortality figures for this group (28%) compare well with those from other centres—20% in 61 cases described by the Philadelphia group[3] and 25% in 145 of 500 cases by the Boston group.[4] It will incidentally be noted that in both these centres a considerable proportion of the cases done are in group 4.

2. We regard central chest pain on effort, relieved by rest, as angina pectoris. This occurred in 17 patients in our series.

3. We believe that the pulmonary arterial pressure in mitral stenosis varies from normal to levels well above systemic arterial pressure. Moreover, the height of the pressure does not necessarily determine the degree of obstruction in the pulmonary arterioles. Pulmonary hypertension was diagnosed by clinical signs and was regarded as severe in 22 cases (29%). It is true that when the pulmonary hypertension is severe the pulmonary arterial resistance is likely to be high and that a 'second obstruction' does indeed exist. However, as we did not catheterize our patients and, therefore, could not obtain haemodynamic data to prove this, we were not prepared to make any assumptions regarding the complex problem of the role played by the mitral stenosis itself, the pulmonary arterioles, the cardiac output, and other factors in the genesis of the pulmonary hypertension. Our statement that a second obstruction develops in a *small* proportion of cases was clearly never meant to be a deduction from the above and, being made in the introduction, was merely used to convey a concept to the reader. If Drs. Zion and Bradlow believe that a high pulmonary artery pressure simply means a high pulmonary arteriolar resistance, thereby implying a second obstruction, then from their own assumptions they may well believe that our statements have been contradictory.

4. With the index finger.

5. We are fully aware of the fact that in mitral incompetence with mitral stenosis the valve cusps tend to be more rigid and the disorganization of the anatomy more severe. The technical difficulties are naturally greater. However, we are only concerned in reporting what happened in those cases who were submitted to surgery with this type of lesion and not what was expected. As we had only 2 excellent results in 13 patients with mitral incompetence, we still feel that a favourable result cannot be anticipated in this type of lesion; moreover, even 2 out of 5 with slight incompetence we do not regard as a satisfying percentage, although we freely admit the figures may not be statistically significant.

The correction we wish to make in Table IV is shown in the following:

TABLE IV. OPERATIVE FINDINGS

Valve Orifice in sq. cm.	*Pure MS*	*MS+MI*	*MS+ Signif. MI*	*MS+ Gross MI*
1 or less ..	48	2	—	—
1–2 ..	13	3	6	—
2	1	—	—	2
Total ..	62	5	6	2

V. Schrire
L. Vogelpoel
W. Phillips
M. Nellen
Cardiac Clinic
Thoracic Surgical Unit
Groote Schuur Hospital
Cape Town
17 January 1956

1. Zion, M. M. and Bradlow, B. A. (1955): S. Afr. Med. J., **29**, 1244 (24 December).
2. Schrire, V., Vogelpoel, L., Phillips, W. and Nellen, M. (1955): *Ibid.*, **29**, 1108 (26 November).
3. Denton, C. and Bolton, H. E. (1955): Circulation, **12**, 694.
4. Ellis, L. B. and Harken, D. E. (1955): Circulation, **11**, 637.

CAPE TOWN CENTRE FOR CEREBRAL PALSIED CHILDREN

To the Editor: Would you be good enough to permit me space to inform your readers that there exists in Cape Town a centre for the treatment and education of European cerebral palsied children. The staff of this centre would be pleased to examine cerebral palsied children of any age who might be submitted to them. Communications should be directed to the Secretary at the address given below (telephone 69-1318). Preference would be given to the early age-groups and the medical staff would be prepared to see children as soon as the condition is diagnosed.

The centre would be grateful for information concerning age and other particulars of cerebral palsied children within the Cape Province.

At the moment facilities can only be offered on a daily basis, but the centre hopes very soon to offer hostel accommodation to a limited number of children. It should be emphasized that this centre serves only the Cape Province.

C. W. Coplans
Chairman, Medical Advisory Committee
'Keerweer'
Meadow Road
Rosebank, Cape
12 January 1956

NATIONAL OR 'CONGLOMERATE' MEDICAL AID SOCIETIES

To the Editor: It is felt that a word of explanation may be necessary in reference to the recent resolutions of Federal Council which have denied recognition to 'conglomerate' medical aid societies.

The changing pattern of the practice of medicine, in which contract work has invaded the sphere of private practice to such an extent that private practice has now become the lesser of the two, has made it necessary for Medical Associations to appreciate the need of ensuring that the interests of doctors are safeguarded. The invasion of contract practice into the sphere of private work was at first insidious, but has now become very apparent, bringing with it the realization that lay bodies in control of contract work have placed themselves in an authoritative position in relation to the profession. This is the major challenge which we have to face today. It has been stressed time and again by World Medical Association authorities. Nationalization of medicine has brought in its train corresponding loss of autonomy by the profession.

In the larger centres there has been evidence of the growing authority which lay bodies have ascribed to themselves over the medical profession. It is perhaps not very important, but one could quote instances where representatives of these bodies have made statements such as: 'We hold the purse-strings and we will therefore dictate to the medical profession', and 'Is there any reason why a doctor should receive a salary in excess of that of an artisan'? With these warnings, it has become apparent to us that representatives of medical associations should be on their guard against the encroachment by lay bodies into the sphere which rightly belongs to the doctor. It is essential for us to retain autonomy and control of medical services within the profession, and not to allow other bodies to gain control and dictate to us, as indicated by recent events.

Press announcements by representatives of various contract bodies have not infrequently stressed an altruistic motive in presenting their case to the public. Whilst allowing for a margin of this, there can be no doubt that these societies are in addition set up to promote a surplus for management expense and for the building up of capital reserves. It must be remembered that this surplus is gained through reduced rates allowed by the profession and by a system of only proportionate payment of accounts to their members. Analysis of the accounts of one of these societies disclosed that the contributions paid by the member, together with the amount refunded to the Society by the member, amounted to more than would have been paid for the medical services on the basis of normal private fees. In addition to this, there are many instances where the policy of these contract practice societies has allowed for admission of people belonging to the higher-income group, without reservation, thus further encroaching on the field of private practice. There have been many instances recorded by doctors where the patients, who belong to the upper-income group and have always been private patients of these doctors, have suddenly presented themselves as patients of one of these medical aid societies, or even benefit societies. Doctors have been defenceless in this position and their protests have been unavailing. These factors are partly responsible for the economic difficulties in which many doctors are finding themselves today.

Steps have therefore been taken by Federal Council to counter this encroachment. These consist mainly of the following: (1) A resolution wherein it is stated that no conglomerate body accepting all and sundry will in future be recognized as a Medical Aid Society by the Medical Association. (2) In order to meet the requirements of the public, the Medical Association has undertaken the tremendous task of considering the formation of a medical insurance scheme initiated under the aegis of the Medical Association.

This will mean that the Medical Association will remain masters in their own house and the control of the profession will be safeguarded. It does not mean that the Medical Association is trying to put pressure on these 'conglomerate' bodies for higher fees, which is the reason that has been time and again expressed in the press by representatives of these 'medical aid societies'. They have unwittingly and perhaps without sufficient knowledge distorted the facts.

I repeat that the reason for not recognizing these 'conglomerate' bodies, set up to operate for a margin of surplus, is not to extract higher fees from them, but primarily and essentially that the medical profession shall retain its own control, which is in danger of passing out of its hands. This does not mean that the Medical Association is not prepared to sponsor and support the smaller medical aid societies, as it has always done, for the benefit of their members. In such circumstances, we know that the medical profession willingly renders a service to these societies, which do not operate on the basis of high administrative costs or accumulation of surpluses. It strikes one as extraordinary that 'conglomerate' medical aid bodies, who claim that they are set up for altruistic purposes, should not devote their efforts to other important features of health, such as housing, clothing and food for the less fortunate.

In considering contract practice, I think there are many correlated problems which deserve careful attention. Reasonable consideration should be given to individual contract-practice bodies, particularly benefit societies. They may be small and the membership may be poor. We should not demand that all the rules must apply to all societies, but should make generous allowances in whatever respects may be necessary, including the questionable rigid application of an open panel. It must also be remembered that among these less fortunate bodies we see the beginnings of a system of contract practice amongst non-Europeans. It is in keeping with the spirit of the medical profession to be generous about these matters. Likewise, honorary service in welfare societies or other charitable institutions will continue to be viewed generously. It has always been a privilege to belong to a profession which could render such service to those unable to afford it otherwise.

These few facts should indicate to members of the Association why these 'conglomerate' medical aid societies are not viewed with favour, and how the representative bodies of the Medical Association are attempting to safeguard the independence and future of the medical profession in South Africa.

A. L. Agranat

404 Medical Centre
Jeppe Street
Johannesburg
17 January 1956

RELAXANTS IN ANAESTHESIA

To the Editor: I wish to support Dr. Roberts[1] in his contention that the relaxant drugs are not nearly as dangerous as they are made out to be in your editorial of 19 November 1955.[2] I am not doubting the accuracy of the figures quoted by Beecher and Todd, for the investigation was done by experts in their field; but I wish to exphasize that this is not the position in South Africa.

My argument is based on our experience in this hospital over the last 7 years, and from information collected all over the Union for the years 1950-54, including the administration of 518,900 anaesthetics. To quote only our own figures from the Pretoria General Hospital for the years 1950-54, we administered 118,794 anaesthetics with a total of 62 so-called anaesthetic deaths, i.e. a death rate of 1 in 1,916 anaesthetics administered. Of these 62 patients, 29 received relaxant drugs during their operations. To make a very conservative estimate I should say that in at least 1 3rd of the total number of anaesthetics administered the patients received relaxant drugs, i.e. 39,600. This gives us a total death rate of 1 in 1,365 anaesthetics with relaxant drugs, compared to 1 in 370 by Beecher and Todd.

To my mind even more disturbing than the so-called 'curare death rate' of 1 in 370, is the death rate given in the same table (Table XXX). For ether (1 in 820), even higher than that for Thiopental (1 in 900) or Cyclopropane (1 in 880). It may also come as a shock to your readers to know that 20 years ago our own death rate from ether anaesthesia was 1 in every 186 anaesthetics administered, with an over-all death rate of 1 in 637,[3] yet nobody at that time advocated that we should stop using ether as an anaesthetic agent. One should, however, not be misled by statistics, because the important point in these figures is often not what they reveal but what they conceal.

Beecher and Todd have a theory that the muscle relaxants have an inherent toxicity of their own; but this theory is not generally accepted, and has not been proved pharmaceutically. Table XXV ('Curare Deaths') is very difficult to understand. They give 63% of deaths as due to respiratory failure (hypoxia) and 37% as due to cardio-vascular failure (notwithstanding artificial respiration). Does this mean that 63% of cases died from secondary cardiac failure despite artificial respiration, and 37% from primary cardiac failure, or did they all die eventually from cardiac failure after all efforts at artificial respiration had failed? I know of no case in this hospital of a death from respiratory failure associated with the use of these drugs after adequate and timely artificial respiration had been instituted by expert hands. By expert hands, however, I do not mean the hands of the nurse holding a funnel with oxygen over the patient's face when he has stopped breathing without making any other efforts at resuscitation. In other words I think that most of these so-called respiratory deaths could have been avoided.

There is also no mention in Table XXV of the antidotes used when respiratory failure occurred. It is possible that some of these deaths from cardio-vascular failure might have been caused by the use of Prostigmine as an antidote when this drug was not indicated. No significant adverse effect of curare or allied drugs on cardiac muscle or its action has so far been proved. I can only state that we use this drug as a routine for all intracardiac operations on patients who already suffer from severe cardiac failure before the commencement of the operation. So far we have not noticed any cardio-vascular collapse due to curare *per se*.

Whether we like it or not, I think the relaxant drugs have come to stay, and to stop their use entirely would be to retard progress. The use of these drugs in selected cases certainly makes things much easier for the anaesthetist, much simpler for the surgeon, and *much safer* for the patient, because we can now use relatively non-toxic drugs for narcosis, without the need of having to keep the patient at a very deep level of anaesthesia.

In conclusion I should like to add that I think we can improve matters, as far as deaths associated with anaesthesia are concerned, by:

(*a*) Giving our students adequate training in anaesthesia, and pointing out the dangers in the use of these drugs without the proper indications and without facilities for resuscitation.

(*b*) Research into the cause of deaths associated with anaesthesia. I may add that this Department in conjunction with the C.S.I.R. hopes to conduct an investigation in the Union on more or less similar lines to those of Beecher and Todd, when we hope to get a better idea of the actual position in South Africa.

(*c*) The establishment of recovery rooms in all large hospitals, where patients suffering from anaesthetic complications can be treated without delay by well-trained staff with adequate equipment at their disposal.

O. V. S. Kok

Department of Anaesthesia
University of Pretoria
Pretoria
15 January 1956

Senior Lecturer in Anaesthesia, Pretoria University Medical and Dental Schools, Chief Anaesthetist, Pretoria Hospital

1. Roberts, F. W. (1955): S. Afr. Med. J., **29,** 1212 (17 December).
2. Editorial (1955): *Ibid.*, **29,** 1084 (19 November).
3. Report of the Committee on Deaths under Anaesthesia (1936): *Ibid.*, **10,** 729.

SPECIALIST, CONSULTANT AND GENERAL PRACTITIONER

To the Editor: Et tu '*Epicure*'![1] The paralogical nature of your arguments are obvious to most of us. But let me point out the obvious for those to whom, possibly, your fallacies are not obvious; for so long as such arguments are made, we must (to our sorrow) answer them.

1. A consultant register is bound to encourage consultation, as the specialist register discourages it, and so accounts for some of *Epicure's* 20% patients not referred to him. Under a consultant register patients will soon learn to ask for consultation; they will value them in perspective; such doctors as do not encourage proper consultation will, on the whole, learn to do so.

2. *Epicure's* figures have value only if the 20% were treated by him with entire success. Very likely many of them were doctor shoppers who went on shopping after having seen him too. In a scientific thesis figures and conclusions would not be accepted without proper evaluation and control; is *Epicure's* 20% a critical analysis of a large number of patients or is it a mere guess? The fact that I as a G.P. also have patients who have been from specialist to specialist devalues his argument.

3. If 'the specialists demanded that the G.P. should not perform any specialised service . . . ' there could of course be no such thing as a family doctor. No one could examine a heart or a lung but a physician; children would have to be seen by paediatricians, and if they had sore throats or otitis media, an E.N.T. surgeon would have to be called in; a G.P. could never give an anaesthetic; and so on. What absurdity!—particularly in the face of the modern holistic and psychosomatic outlook and practice of medicine.

4. If a G.P. is capable of giving service in any so-called 'specialist' field, he is not only entitled to do so but it is his duty. In the country he *has* to. Admittedly some G.Ps., as well as specialists (for instance—according to my Gynie friends—general surgeons doing unskilful myomectomies), pursue pastimes in which they are not skilled; but the specialist register does not prevent such abuses. My own view is that it encourages it among the morally weaker among us.

5. What, if you please, are 'the public becoming educated' in, and what 'demands . . . have to be met by the medical profession'? A departmentalization of medical practice into specialist fields alone? General practice needs special qualifications all its own. One of the G.P.'s skills is the intelligent use of specialist consultation, advice and treatment.

The majority of specialists are admittedly worthy men whom we hold in high esteem; so are the majority of G.Ps.—*Epicure's* innuendoes (which do nothing to enhance the prestige of the specialists) nevertheless.

Senior G.P.

P.S. One terrible, and the commonest, abuse which the specialist's register engenders has not been mentioned in this unhappy correspondence: supersession. I suppose it is so common as to be accepted as normal practice and is not recognized as the evil it is. Daily the family doctor's patients are by-passing him to consult specialist practitioners and being treated by them. The specialist register makes any other practice practically impossible. Most specialists do inform the G.P. (but still accept these patients as their own—even if the treatment is well within the G.P.'s capacity). Keen competition amongst specialists, our horror at creating quarrels and ill-feeling, the fact that we (the medical profession) have educated the public, or allowed them, to accept an evil and unethical practice, fear of giving offence, and such-like understandable considerations, make specialists and general practitioners accept the situation with a shrug of the shoulders. But *what* a situation for an honourable profession!—that we even accept it with little comment in our councils. One thing removing the specialists will achieve: it will do away with this typically South African medical evil of supersession.

1. *Epicure* (1955): S. Afr. Med. J., **29,** 1155 (3 December).

DR. SICHEL'S NEW YEAR MESSAGE

To the Editor: Dr. Lance Impey's letter merits comment. A growing body of opinion in the profession echoes his sentiments. It is with his conclusions that I find fault. Surely his remedy is a defeatist one. If 'present committees and Federal Council cater mainly for the financial status of the individual', and if we as individuals fault this approach, then the remedy lies in our hands.

I believe that it now behoves those of us who share Dr. Sichel's views to discount our own convenience and, no matter how little inclined to do so, to stand for office in our professional organizations. Thus we may remedy the damage done to 'our honour and our reputation'.

The pending Southern Transvaal Branch Council elections will prove both interesting and informative. Present incumbents of executive posts are being actively opposed. The results of this election may easily prove to be the stepping-stone to a new approach (or rather a reversion to the original attitude) in medicine.

S. Joseph Hoffman

210 Lister Buildings
Jeppe Street
Johannesburg
17 January 1956